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QUALITY OF HEALTH CARE AND COST RECOVERY IN AFRICA: EVIDENCE FROM NIGER AND SENEGAL

Phases 2 and 3: Field Work, Research Results, and Policy Recommendations

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ABSTRACT

This applied research paper presents findings from comparative research on health care quality and cost recovery in Niger and Senegal. It also draws conclusions applicable to other African countries. Data are presented from provider, patient, and household surveys conducted from 1992-1994. It analyzes relationships between quality of care and cost recovery reforms in Niger. It presents detailed information on differences between the public and private sectors in Senegal and the relationships between quality of care and efficiency among health care providers.

Findings from this study show how strategies to improve quality can increase efficiency, raise demand for services, and help generate funds to sustain quality improvements in African health systems. The study is extensively illustrated with exhibits and graphs to present its findings. It was prepared for the Health and Human Resources and Analysis (HHRAA) Project of the US Agency for International Development (USAID).

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FOREWORD

This paper is one in a series of reports on findings and policy recommendations from Phase 3 of the Major Applied Research conducted by the Health Financing and Sustainability (HFS) Project.

The Health Financing and Sustainability Project is a five-year initiative funded by the United States Agency for International Development (USAID). The project's mandate is to provide technical assistance, conduct applied research, implement training, and disseminate information on health care financing throughout the developing world. The project seeks to influence policy change by advancing knowledge; testing and improving delivery, financing, and administrative methods; strengthening institutional capacity; and enhancing technical capabilities. To date, HFS has been involved in health care financing activities in over 30 developing countries around the world. Applied research activities account for one-quarter of HFS project activities.

HFS has conducted its major applied research in three phases. Phase 1 included a review of the literature and of past experience and the development of a conceptual framework. The papers generated under Phase 1 are essentially conceptual and methodological and are therefore oriented to field researchers and teachers. Nevertheless, because these papers also underscore current gaps in knowledge, they are of use to international donors, health ministry decision-makers, and others who are concerned with health care policy.

Phases 2 and 3 were designed to reduce the gap in current knowledge identified in Phase 1. Phase 2 comprised the field research and data collection, and Phase 3 involved data analysis, report writing, and dissemination. Phase 3 papers have as their main audience developing country decision-makers and policymakers, inside and outside the countries where the research was conducted. Methods, findings, and recommendations are written in nontechnical language, with technical information provided in appendices.

Phase 3 products also will interest international donors because they validate or reject important hypotheses and evaluate existing policies. These papers also test new or improved research methods, identify directions for further research, and contribute empirical information to the general body of knowledge. Therefore they should be useful to researchers and academicians.

THE ROLE OF APPLIED RESEARCH IN HEALTH POLICY REFORM

Health financing reform is a prominent political issue and a priority for the health sector around the world. In industrialized nations, containing health care costs has been one main impetus behind efforts to reform health financing policies. In developing countries, a key motivating factor for reform efforts has been the growing demand on increasingly strained public resources represented by the traditional commitment of governments to provide free health services to all.

At the center of the policy debate are discussions about ways to improve equity and efficiency. Ideally, health care financing practices and policies should promote both equity — financial and physical access to care—and efficiency—maximization of health gains through reductions in the costs of production and increases in appropriate consumption. These discussions also include debate about the impact of health financing reforms on quality of care, access by the poor, and the respective roles of the public and private sectors.

Formulating effective policies to address these issues requires sound empirical information about a broad range of questions on the demand and supply sides of the market for health services. In many developing countries, sound empirical data are seldom available and the public debate about health financing often is dominated by conventional wisdom that may not be well grounded in reality. Some examples of conventional wisdom that require empirical testing include:

- "The poor will not pay for health care services."
- "The private sector is more efficient than the public sector in producing health services."
- "The private sector has no role in meeting the public health agenda."
- "Where the largest share of total health resources is spent on curative care, the allocation of resources is inefficient."
- "Social financing and risk-sharing schemes will not be effective in poor, rural areas."

A new body of research has begun to emerge that tests the validity of some of these common beliefs about health financing. For example, empirical studies of health care demand in developing countries have demonstrated that when given the choice, even the poorest often prefer to pay for better-quality health care rather than obtain free but low-quality health services.

Public policy concerning health finance can greatly benefit from improved knowledge about such issues as the willingness of people to pay for health services, the relative efficiency of public and private providers, private sector roles, and the cost-effectiveness of investment in curative and preventive care. Yet despite the greater attention recently given to applied research in health finance, large gaps in our knowledge remain.

AN AGENDA FOR APPLIED RESEARCH

HFS applied research seeks to advance knowledge in key policy areas and to develop analytical capabilities among developing country researchers. The research is designed to address key policy questions, explore neglected areas of research, improve analytical methods, and test new methodological techniques. With the review and advice of an external Technial Advisory Group, the project identified four broad areas of inquiry where major applied research was warranted: cost recovery, productive efficiency, social financing, and the private sector. To meet AID contractual requirements, the project also identified nine specific topics within these categories (see box).

HFS MAJOR APPLIED RESEARCH: AREAS, TOPICS, AND QUESTIONS		
Research Area	**Phase 1 Research Topic**	**Main Research Question**
COST RECOVERY	Quality of Care	Willingness to pay for improvements in quality
	Protecting the Poor	Design of equitable cost recovery systems
	Efficiency in Consumption	Design of monetary and other mechanisms that promote efficient patterns of demand for care
PRODUCTIVE EFFICIENCY	Pubic Sector Reform	Feasibility of improving efficiency in production through personnel incentives
	Reallocating Public Sector Spending	Definition of optimal allocation pattern and appropriateness of current allocation patterns
SOCIAL FINANCING	Expanding Its Role	Feasibility of risk-sharing for the poor
PRIVATE SECTOR	Development of Private Health Care Markets	Determinants and implications of private sector development
	Public-Private Differences in Efficiency	Existence of differences in productive efficiency between government and private providers
	Public-Private Interactions	Feasibility of socially beneficial collaboration between government and private sector

HFS conducted literature reviews (Phase 1) for all but one of these nine topics (the exception was reallocating public sector spending). At AID's request, an additional field research topic—an assessment of the economic impact of malaria—was studied. Field research has been conducted (Phase 2) and analytical papers have been written (Phase 3) in all four of the major research areas. These cover the six specific topics as follows:

- Willingness to pay for improvements in health service quality in the context of cost recovery
- Impact of health service quality improvements on costs, efficiency, and demand
- Efficiency of public sector health services
- Comparison of public and private sector efficiency in health service delivery
- Impact of social financing of health services on demand, equity, and sustainability
- Development of private sector health services
- Economic impact of malaria

In addition to these applied research papers, HFS has produced a wide array of research instruments and data bases. (A list of these is provided in an HFS Theme Paper on data collection as a policy tool.)

POLICY-ORIENTED APPROACH TO APPLIED RESEARCH

HFS has conducted all the field research activities with active collaboration and involvement of local researchers and decision-makers. In addition, when considering alternative field sites for major applied research, HFS sought to identify opportunities where research results would feed directly into the policy reform process.

In Niger, for example, HFS provided technical assistance to the government to test two cost recovery systems for curative care in ambulatory public facilities: a fee-per-episode of illness and a household tax with a copayment. Major applied research was conducted to assess and compare key indicators under the two financing systems, including the improvements in quality of care, the costs of quality improvements, people's willingness to pay for quality improvements, and equity implications of the financing methods. Research activities were intertwined with technical assistance to design and implement improved management systems for health facilities, new management procedures for clerical personnel, and improved diagnostic and treatment practices for medical staffs.

In Senegal, HFS conducted applied research to assess various dimensions of the current health system, including the legal and regulatory framework of health financing; the effectiveness of village health committees; the costs, financing, and efficiency of public and private providers; the size, role, and evolution of the private sector; and the demand for health care. The government of Senegal is planning major regional demonstration projects to implement some of the recommendations that emerged from this research.

All HFS major applied research products undergo a formal review process that involves project staff, external experts from academic and international institutions, and members of the project's Technical Advisory Group. HFS seeks excellence in its products and welcomes comments or suggestions about its research work.

If you have questions or comments about our applied research work, please contact the Technical or Applied Research Directors. For information about or to order written HFS products on research, technical assistance, and training, please contact the project's Information Center.

Ricardo A. Bitran
Director of Applied Research

EXECUTIVE SUMMARY

BACKGROUND

USAID's Health and Human Resources Analysis for Africa (HHRAA) project asked the Health Financing and Sustainability (HFS) project to conduct research on issues related to quality, costs, efficiency, and financing of health services in Africa. HFS expanded on data it already had collected in field surveys in Niger and Senegal and collected new survey data on quality of care. This report presents the findings from that comparative research, using data from provider, patient, and household surveys conducted from 1992-1994. It analyzes relationships between quality of care and cost recovery reforms in Niger and relationships between quality of care and efficiency in the public and private sectors in Senegal. It also draws conclusions applicable to other countries in Africa.

RESEARCH AND POLICY ISSUES

This study assesses comparable data on several dimensions of quality for two countries, as well as for the public and the private sectors. This study breaks new ground by combining quality data with information on financing, costs, and efficiency from the same facilities. It uses this combined data to illustrate and draw conclusions about the role of quality improvements in cost recovery, impacts of quality on cost and on efficiency, and prospects for sustainable financing of quality improvements in African health systems. Findings from this suggest how strategies to improve quality can increase efficiency, raise demand for services, and help generate funds to sustain the quality improvements. They also indicate the importance of channeling private and public funds to support locally appropriate quality improvements.

DATA SOURCES

Data for Niger come from 18 primary health care facilities in three districts where the Ministry of Health was conducting a pilot test of two different financing methods. Data were collected in 1992 and 1993 from facility and patient interviews at the facilities and from a random sample survey of 1,800 households in the three districts. In Senegal, data on quality, costs, and efficiency were collected in 1993 from a nationwide sample of 95 public hospitals, health centers, health posts, and health huts and from 57 private ambulatory health facilities, including Catholic health posts, company clinics, for-profit clinics, and other clinics run by charitable organizations.

FINDINGS

1. QUALITY OF HEALTH SERVICES

Basic infrastructure and processes to ensure quality in the public sector health facilities are frequently lacking. The assessments of quality in Niger and Senegal revealed similar problems. Public health facilities at all levels in Senegal and in the primary care facilities in Niger, prior to the pilot tests, experienced frequent

stockouts of drugs, supplies, and equipment; diagnosis and treatment protocols were not available; reliable data on costs and revenues were seldom available; and health workers often did not follow standard treatment protocols.

Improvements in basic structural aspects of quality are often easier to make than process improvements. In Niger, efforts to upgrade quality resulted in observable improvement in staff training, availability of vaccines and family planning commodities, medical supplies, and availability of guides and manuals for diagnostic and treatment protocols, cash and drug management. But once this basic infrastructure was in place, even with the presence of diagnostic and treatment guidelines, significant gaps in the implementation of these protocols were observed.

Private sector providers often outperform the public sector in quality of care. The Senegalese private sector performed better than the public sector in several respects. Stockouts of drugs, equipment, and supplies were much less frequent. Compliance with routine medical procedures was better. Public facility staff perceived their care to be quite average or below, in contrast to their private sector counterparts who generally perceived their care to be good. In spite of quality variations between the public and private sectors, patients declared that they were satisfied regardless of the provider.

Quality varies within the private sector. In the private sector, variation in quality existed among different types of providers. Generally, for-profit and Catholic providers offered the best care.

Patients and providers perceive quality differently. In Senegal, findings indicated important differences between patient and provider satisfaction. Patients appeared to be more satisfied with the care they received than providers were with the care they rendered. Providers tended to focus on the availability of supplies and drugs in making their assessments. Patients considered a variety of factors including economic, geographic, and psychologic reasons.

Some aspects of patient-perceived quality increase utilization more than others.
Patients in Niger seemed aware of the quality improvements in medicines and a majority thought that this was responsible for increasing utilization in the districts where improvements had been introduced. "Free follow-up visits" may have also increased utilization.

2. RELATIONSHIPS AMONG QUALITY, COSTS, AND EFFICIENCY

High costs of improving quality often reflect costs of establishing the service base.
For Niger, quality improvements required significant expenditures in both fixed and variable costs. For example, the value of drugs that public health facilities consumed was 2.5 times greater in one pilot test district, and 3 times greater in the other, than the annual drug allocations from the central Ministry of Health budget. Many of the resources required to implement the quality improvements in Niger can be viewed as the "costs of doing business" or simply establishing the service delivery base. It is precisely because these represent many of the fixed investment costs and the basic variable costs related to numbers of people served that they are so large relative to currently underfunded Ministry of Health budgets.

Efficiency and productivity of the public sector is often lower than in the private sector and some private providers are more efficient than others. As measured by number of visits per day, efficiency in public facilities in Senegal was generally quite low in health facilities at all levels and for all medical personnel in the study sample, though some regional variation existed.

Greater efficiency can be associated with higher quality. Providers with higher productivity may not necessarily sacrifice quality in order to produce more services. For example, for-profit and Catholic providers saw more visits per health worker than did public sector providers. They also had a more efficient ratio of medicines and other supplies per health worker. These categories of private providers offered generally better quality of care.

Poor quality undermines efficiency and cost effectiveness. Poor quality of care might cause inefficiencies in the public health sector, though this cannot be shown conclusively.

3. QUALITY AND FINANCING

Initially user-fee systems may cover part or all medicine costs, but cannot be expected to finance all quality improvements without additional support from some other form of financing.

Some financing mechanisms raise more revenue than others, but all financing mechanisms should ensure that sufficient funds are earmarked to pay for quality improvements.

Consumers are Willing to Pay for Quality.

CONCLUSIONS AND RECOMMENDATIONS

1. One of the principal needs for, and costs of, improving quality at MOH facilities is assuring an adequate supply of essential medicines. This establishes the basic service, improves effectiveness of health personnel, attracts patients to the facility, and provides grounds for their willingness to pay for services. These findings suggest that appropriate drug policies are among the most important policy actions that could simultaneously improve quality, effectiveness of care, and cost-effectiveness of health expenditures already made.

2. Ministries of Health need to maintain continuing in-service training, supervision, and other mechanisms for assuring quality standards.

3. Substantial segments of the private sector appear to be both efficient and offer high-quality care. Efforts should be made to encourage the growth of private providers; However, the variation in quality which occurs in the private sector must be dealt with. A key question is whether the public sector can emulate the positive aspects of private providers. More analysis of this question is needed.

4. Some quality improvements may be more important to undertake than others for purposes of sustainability. The evidence suggests two important criteria to take into account. First, identify methods that will most improve cost-effectiveness of service delivery and that generate significant cost savings. Second, given widespread evidence that people's perception of quality is key to their willingness to pay for health services, it is important to tap willingness to pay for quality.

5. At a managerial level, cost analyses of quality improvements should be conducted.

6. Because of the key role of quality in affecting costs of service delivery, as well as prospects for sustainable financing, Ministries of Health need to a) estimate the recurrent and investment costs, and the fixed and variable costs of any quality improvements planned in the basic infrastructure and in processes that maintain quality; b) identify simple, low-cost ways to measure and monitor the costs of quality improvements; and c) evaluate the impact that quality changes are having on utilization and health outcomes.

7. Because of the substantial costs of improving quality, Ministries of Health need to consider several financing options in order to assure sustainability of quality improvements. It is likely that a combination of fees, national taxes, local taxes, and risk-sharing mechanisms will be necessary. Data affirming people's willingness to pay for higher quality health services suggest that fees in the public sector might be higher than initially thought. Some kind of local earmarked tax mechanism or other form of social financing, such as risk-sharing or prepayment, that raises funds from the district/community population, not just those who fall ill during a year, also show potential for raising significant funds.

8. Having the necessary legislative infrastructure to legitimize new forms of decentralized revenue collection and the use of these revenues for improving quality is important. Laws setting in place local management of tax, user fee, and other social financing revenues and using these funds to support quality improvements locally are important.

9. Patients perceive improvements in quality of care and they respond differently to different aspects of quality. Governments should place more importance on disseminating information on quality of the various aspects of the system so that patients can make better use of the system for their benefit and for the benefit of the system as a whole.

1.0 INTRODUCTION

Poor economic trends in many developing countries have motivated policymakers to consider cost recovery in the health sector, a mechanism whereby patients pay part or all of the cost of care in a public facility, as a means to generate additional resources. An increase in user fees sometimes generates an increase in revenues, which can be recycled to support the provision of public health care services. Patients who do not perceive value for money under this user fee scenario may choose other providers or avoid treatment altogether. A recurring lesson from initial experiences in cost recovery is that without visible and fairly immediate improvements in the quality of care provided, patients will not support the implementation of user fees. In many cases, user fees are collected at the local health facility and sent directly to the central authority creating serious obstacles to recycling revenues to improve quality at the facility. Although quality improvements may help generate additional revenues, the cost consequences of these quality improvements are not well known. Ultimately, net revenues generated through cost recovery depend on both the revenue and cost effects of quality improvements.

This article reviews new evidence from Niger and Senegal in terms of four major issues pertaining to the role of quality in cost recovery:

(1) How can quality of care be defined, measured and assessed?

(2) What do quality improvements cost?

(3) How is quality related to efficiency and cost effectiveness? and,

(4) How can quality improvements be financed through cost recovery?

The content of this report draws heavily from existing reports generated from the Health Financing and Sustainability (HFS) project major applied research activities in Niger and Senegal (Bitran, Brewster, Ba, 1994a; Bitran, Brewster, Ba, 1994b; Diop, Kailou, Oumarou, 1993; Diop, 1993; Ellis, Chawla, 1994; Wouters, Adeyi, Morrow, 1993; Wouters, Kouzis, 1994; Yazbeck, Wenner, 1994; Yazbeck, 1994).

The presentation is organized as follows. The next two sections describe the policy context and the data collection efforts. Then, four sections discuss the concepts and findings related to the four issues above. The last two sections present conclusions and recommendations. The report is directed to the staff of USAID, government decision-makers and technicians in Niger, Senegal and other developing countries, health systems researchers and students, and staff from other development agencies.

This review was funded through an AID grant from the Health and Human Resource Analysis for Africa (HHRAA) project to the USAID Health Financing and Sustainability project. At the time, HFS already had a major applied research project in progress in each of these two countries, both of which addressed some aspects of health care quality.

In Niger, HFS helped to plan, implement, and evaluate a major pilot test on cost recovery in three districts. Much of the planning of the pilot tests was done under USAID/Niamey's Niger Health Sector Support Grant (NHSS), with assistance by the Tulane/Abt technical team. In the fall of 1992, the responsibility to

manage and evaluate the tests was transferred to the HFS project, under a mission buy-in for technical assistance.

In Senegal, as part of a comprehensive policy reform initiative, the Government commissioned a study focusing on efficiency, quality, utilization, and costs in public health care facilities. Funding for the study was provided by USAID/Dakar under a buy-in to HFS. HFS undertook the study in Senegal in 1992 and extended it in 1994 to look at private and nongovernmental health care facilities.

This report is also relevant to HFS's Major Applied Research Agenda on "Cost Recovery and the Quality of Care" (HFS 1991), the goal of which is to enhance understanding of the interrelationship of cost recovery and quality improvements. This report builds on the concepts and literature review presented in the Phase I report, "Quality of Health Care and Its Role in Cost Recovery" (Wouters, Adeyi, Morrow, 1993).

2.0 POLICY CONTEXT

2.1 NIGER

In 1989, the Ministry of Public Health of Niger specified alternative ways of financing health services in the non-hospital sector. It planned to test these alternatives on a pilot basis before launching a national policy on cost recovery. With the technical assistance of USAID and a grant from the World Bank for start-up inventories of pharmaceutical products, the Ministry of Public Health implemented a pilot project in cost recovery, which included both the implementation of user fees and quality improvements. It focused on improved drug availability in 18 Ministry of Health ambulatory facilities in three districts. The pilot projects began in May 1993 with the potential for expansion after one year. The new system included three major components. First, diagnostic-treatment protocols using generic brands of essential drugs were implemented. This would reduce the costs of medicines in the delivery of primary health care. The second component was improvement of management systems and capabilities. The third component consisted of installing two different systems for mobilizing additional resources at non-hospital facilities.

The district of Boboye adopted a form of social insurance consisting of an earmarked head tax combined with a small copayment per illness. The district of Say increased private financing through a fee-per-episode system, whereby the patient paid a lump sum each time he or she was ill. The district of Illéla was selected as the control site where no cost recovery was implemented. In Illéla, all services were provided free at public facilities, although patients still incurred other travel and time costs.

The Government of Niger continued to provide current levels of subsidization to the intervention facilities, including the payment of personnel salaries. The World Bank funded initial stocks of pharmaceutical supplies and recurrent partial subsidies to replenish these stocks. Belgian foreign assistance contributed to the design and implementation of the diagnostic and treatment protocols. USAID/Niamey supported the planning, implementation, and evaluation of the pilot tests.

In Boboye, the diagnostic and treatment protocols were put in place in 1989, about three years before the implementation of cost recovery. At the time of the baseline survey, Boboye health personnel had substantial experience with these protocols in contrast to personnel in Say, where these protocols were introduced at the time when the cost recovery tests were instituted.

2.2 SENEGAL

In spite of difficult economic circumstances, Senegal achieved some notable health gains over the past 30 years. Between 1960 and 1990 life expectancy increased by 15 years to 50. The child mortality rate fell from 303 to 156 per thousand. During 1990-91, child immunization coverage rates reached 60 percent for the third dose of diphtheria (DPT) and for measles. Nevertheless, Senegal still faced major challenges in the health sector including limited public sector resources, inefficiency in health services production, and expenditures skewed heavily towards hospital services (World Bank, 1992). To address these problems, the government adopted a sectoral reform package known as National Health Policy (World Bank, 1992). Under this policy, steps were taken to decentralize services, redeploy government health staff, set up a legal framework for enhanced community participation in health-related decisionmaking, and reform drug procurement and prescription practices in government health facilities including the institution of an essential drugs policy. In

1991, the government also adopted the Bamako Initiative as a means to supplement meager budgets. Central to the policy reform process was a concern that health services, either public or private, should be of acceptable quality of care. Towards this end, the Government requested baseline information on costs, efficiency, utilization, and quality of care to guide implementation of the policy.

3.0 DATA SET

3.1 NIGER

The data on quality of care in the Niger pilot project districts came from two major sources. First, a major evaluation of the cost recovery tests was based on data collected using experimental design, where household and facility data were collected before and after the initial implementation of cost recovery. Second, additional surveys of facilities and patients were done after the intervention, focusing specifically on quality-of-care issues. Each of these data sets are described in turn.

In the experimental design phase, similar data were collected in districts with and without the cost recovery intervention. Household surveys were conducted six months before (November 1992) and six months after the intervention (November 1993). These surveys were conducted independently in each district in order to be able to compare them two by two. The household surveys included four components: (i) household questionnaire, (ii) curative questionnaire, (iii) preventive questionnaire, and (iv) income questionnaire. The randomization process for the household survey was based on the General Census of the Population of 1988 and on the 1988 update on the distribution of health installations in Niger. Different samples were used in the pre- and post-tests. For the baseline and follow-up surveys, 612 household were surveyed in each district. Using the household surveys, studies were done on how utilization patterns and episode costs changed as a result of cost recovery.

During the experimental design phase of the pilot project, facility-based records were also kept on facility utilization, amount of medicines used, receipts at the health facilities, and incremental administrative costs resulting from cost recovery. These records were used to provide a quantitative summary of the progress of activities at the health facilities following the introduction of cost recovery.

After the completion of the household and facility surveys, additional data were collected on quality of health care from the 18 ambulatory care facilities in the districts. At each facility, an inventory of equipment, supplies, and medicines was done; ten patient cases reporting any curative illness were observed for compliance with protocols; and ten patients were interviewed upon exit for their perceptions of quality. As in Senegal, structural, process, and outcome (in terms of patient perceptions) measures of quality were gathered to monitor quality conditions after the intervention. No directly comparable quantitative information was available about these aspects of quality of care before the intervention.

3.2 SENEGAL

The study in Senegal gathered facility data about costs, utilization, and quality of care. A nationally representative sample of three government hospitals, 23 health centers, 46 health posts, and 23 health huts for a total of 95 public facilities was drawn using a sampling framework developed earlier by the World Bank under its Social Dimensions of Adjustment's *Priorities Survey*. A nationally representative sample of nongovernmental providers was also selected including 30 Catholic health posts, 13 company clinics, 6 private for-profit clinics, and 8 "other" clinics (Red Cross, Muslim, Army) for a total of 57 private facilities.

For quality of care, attempts were made to obtain structural, process, and outcome (in terms of patient and provider perceptions) measures. Facility-based questionnaires for measuring costs, physical plant, staff, financing sources, and utilization were used. Samples of patients were drawn randomly to observe provider compliance with diagnostic and treatment practices and to elicit patient quality perceptions. For the treatment of diarrhea and malaria by various categories of medical staff, the enumerators observed a maximum of 10 ambulatory patients during a two-day interval (about 950 cases). For each of several general medical procedures, samples of five patients were obtained. To improve randomness of selection, patients were drawn into the sample at different times of the day during the two-day facility survey. For patients undergoing surgery, a maximum sample of 10 individuals was drawn. For patient quality perceptions, 20 patients were interviewed in each facility. For staff perceptions of quality, all medical employees were interviewed.

4.0 DEFINING, MEASURING, AND ASSESSING THE QUALITY OF CARE

4.1 CONCEPTS

While no single definition of health service quality applies to all situations, the following definitions are helpful guidelines. Donebedian said that "the quality of technical care consists in the application of medical science and technology in a way that maximizes its benefits to health without correspondingly increasing its risks. The degree of quality is, therefore, the extent to which care provided is expected to achieve the most favorable balance of risks and benefits" (Donebedian, 1980, p.5-6). According to Roemer and Aguilar (1988), quality of health care consists of "proper performance (according to standards) of interventions that are known to be safe, that are affordable to the society in question, and that have the ability to produce an impact on mortality, morbidity, disability, and malnutrition." Total Quality Management emphasizes doing the right thing right away (Walton, 1986). All of these definitions focus on technical and clinical aspects of care as seen by the provider and on implementation of the known clinical processes. More needs to be known about patient perspectives of quality; they may or may not always coincide with provider views. Also, while clinical aspects are at the heart of quality of care issues, without adequate support systems such as management information, logistical systems, and financial management, good quality care will not be achieved. Definitions of quality should be expanded to include such concerns.

Donebedian proposes three levels of measurement of quality of health care: structure, process, and outcome (Donebedian, 1980). Structure assesses the quality of health care through a study of the setting in which the care takes place. This includes adequacy of facilities and equipment, administrative processes, qualifications of medical staff, and organization. This assumes that given proper settings and instrumentalities, good medical care will follow. Process considers not only that medical technology exists to achieve results, but also whether what is known to be good medical care has been applied: clinical history, physical examination, diagnostic tests, justification of diagnosis and therapy, technical competence, evidence of preventive management, coordination and continuity of care, and acceptability of care to the recipient. This assumes that given the proper procedures, good health outcomes will result. Outcome measures consider whether a change in a person's current and future health status can be attributed to antecedent health care. It examines recovery, restoration of function, survival, and patient satisfaction. The validity of outcomes as a dimension of quality is seldom questioned. However, there are frequently multiple factors which in addition to the treatment protocol affect health outcomes, such that good health is not always attributable to good procedures. Examples of some other determinants of health might include education, income, environment, and nutrition.

To determine where quality improvements are needed, one needs to understand structural, process, and outcome measures from both provider and patient perspectives for clinical and support services (Wouters, 1991). For all three levels of measurement, little is known about how to aggregate various components within each (Bitran, 1992). For example, in process measures how does one account for compliance with critical and less-critical steps. What weights should be given to each component? Quality assurance goes one step further to establish a set of activities to ensure that standards for clinical and non-clinical aspects of the services are maintained and even continually improved.

Appropriate, valid, and reliable methodologies for measuring the structural, process, and outcome aspects of quality are still under major discussion. Structural measures are probably the easiest to collect since they consist mainly of taking an inventory of the physical and administrative setting. A variety of methods exist to assess the process of care including reviews of a sample of clinic records (medical audits) and/or various service statistics; detailed observations of actual tasks, procedures or episodes of treatment; observations of simulated behavior (e.g. role playing); surveys of activities based on patient/staff recall; brainstorming among workers about processes followed; and personal (researcher) observations (formal or informal) about facility activities. Outcome measures are probably the most challenging to develop. For patient satisfaction, one could conduct informal conversations with patients, prepare a compilation of complaints, conduct patient satisfaction interviews (upon exit, or follow-up at home), or set up client windows or focus group discussions. Further work is needed to clarify the merits and problems with each (Franco et. al, 1994). Even in the U.S., methods for collecting information on patient satisfaction are aggressively being investigated (Rubin, 1990). Methodologies for measuring health outcome measures are also problematic. Preliminary work in this area had tended to focus on adverse health outcomes, complications, resumption of normal activities, and death (Shepard et al, 1993; Binns and Early, 1989).

4.2 MEASURES OF QUALITY OF CARE

Both the Niger and Senegal studies conducted assessments of selected aspects of quality of care which included measures of structure, process, and outcome. These assessments were not intended to provide detailed, comprehensive information on quality of care, but rather general information on quality to complement analysis of health care financing. Based on expert opinion from a group of health professionals in each country, key equipment and critical steps in each process were identified to guide data collection. The measures of quality presented in the tables and figures below are calculated as simple averages of a multitude of items included under each major aspect of quality (e.g., average of supplies, key vaccines, various types of records). This relatively simplistic approach to measuring quality provides a rough assessment of quality. As noted earlier, measurement instruments for quality are still quite rudimentary.

In addition, these assessments did not look at the performance of quality assurance activities; that is, those sets of activities that would be carried out to ensure that standards are set and continuously maintained for all health service-related activities (both clinic and support services). Finally, these assessments focused on clinical issues, although some attention was given to non-medical support services such as management information, especially in Niger where enhanced record keeping, and cash and drug management systems were instituted. A summary of the measures of quality used are given in ***Exhibit 4-1***.

EXHIBIT 4-1
COMPARISON OF MEASURES OF QUALITY

	NIGER	SENEGAL PUBLIC & PRIVATE SECTORS
Structure	*Medical equipment, vehicles:* no. of functional units during reference year. *Drugs, supplies:* availability of product at time of survey, duration of stockouts, essential drugs, vaccines & contraceptives. *Medical staff qualifications:* no. of staff receiving training in past 2 yrs. *Protocols:* presence of standard diagnostic & treatment protocols. *Mgmnt Info:* adequate record and information system for specific items.	*Medical equipment, vehicles*: no. of functional units during reference year. *Drugs, medical supplies*: availability of product at time of survey, duration of stockouts during reference year; focus on essential drugs. *Medical staff qualifications*: no. of employees receiving refresher training over past two yrs. *Facility Setup*: presence of treatment protocols, family planning supplies, lab exam. *Mgmnt Info:* general observations.
Process	*Treatment Practices:* observation of episodes of treatment to compare actual practice with diagnostic & treatment protocols for general outpatient curative illnesses.	*Treatment Practices:* observation of episodes of treatment to compare actual practices with locally agreed upon norms for a sample of patients with fever or diarrhea as the main symptom, for a sample of deliveries, and for a sample of routine medical procedures (drawing blood samples, blood transfusions, disinfection of wound, injections, umbilical cord perfusion, baby weighing).
Outcome	*Staff Perceptions:* no information. *Patient Perceptions*: interviews with a sample of patients from each facility about preferred facility attributes, perceptions of changes in quality, general satisfaction.	*Staff Perceptions:* interviews with all facility staff about adequacy of supplies, self-assessment of quality of care, assessment of needed improvements. *Patient Perceptions:* interviews with a sample of patients from each facility about preferred facility attributes and willingness to return to facility in the future.

4.2.1 Niger

The follow-up assessment of quality of care in Niger collected information on five aspects of quality:

- staff size and training over the two years preceding the survey;
- availability of essential drugs, vaccines and contraceptives, medical supplies;
- medical staff compliance with clinical standards of treatment (welcoming, history-taking, vital signs, diagnostic exam, communication);
- patient satisfaction, perceptions of changes in quality; and
- record and information system.

4.2.2 Senegal

The study of quality of care in Senegal focused on collecting information on five aspects of quality:

- staff size, staff training over the two years preceding the survey;
- availability of drugs and other medical supplies at the time of the survey and throughout the reference study period (FY91);
- medical staff compliance with clinical standards of treatment (general communication, critical diagnostic/treatment steps);
- patient quality perceptions; and
- staff quality perceptions.

In Senegal, no specific information was collected on management information systems, but general observations about the availability of cost information were made.

4.3 FINDINGS

The contexts for the assessments of quality of care in Niger and Senegal were different. In Niger, since quality improvements were instituted as part of the cost recovery intervention, ideally one would have wanted to compare quality measures before and after the intervention. However, quantitative measures of actual changes in various dimensions of quality of care were not available. Instead, general observations about baseline conditions were noted and data were available to indicate whether health services after the introduction of the intervention were exhibiting characteristics consistent with the desired quality improvements.

In Senegal, the National Health Policy was just beginning. The assessments of quality, costs, efficiency and utilization provided baseline information to guide future implementation.

4.3.1 Niger

Quality of Care: Before the Intervention

The information presented in this section is drawn primarily from qualitative descriptions of the conditions of health services before the implementation of the intervention. Not much quantitative information was available for this period; however the evidence from the baseline survey suggests poor quality: demand for medical care outside the home was very slight in all three districts. In Say, about 15 percent of sick persons sought outside medical care to cure their illness. In Boboye, this figure was 20 percent and, in Illéla, the percentage seeking outside medical care was 14 percent.

Structure: In general, the public health system in Niger had seriously deteriorated at the time the pilot projects were initially considered. Drugs and supplies were nearly non-existent. Equipment was absent or not functional. Through Belgian foreign assistance, training in basic outpatient preventive and curative care was just beginning around the time of the pilot tests. In Boboye, training first started around 1989, but refresher training was provided prior to the beginning of the tests. In Say, training was provided for the first time right before the pilot tests started (November 1992). Management information systems were very limited.

The baseline household survey showed that almost half of all sick persons in the three districts had recourse to medicine available at home to cure an illness in the two weeks prior to the interview. In the three districts, about a quarter of the sick persons who bought medicine before attending a health facility did so at a pharmacy; the remaining three-quarters acquired their medicine from a village health worker, a street vendor, or at the market. Most sick people (50 percent) in the Say district got their medicines from a health worker; in Boboye and Illéla, medicines were mostly bought at the market or from street vendors (50 percent and 55 percent, respectively).

Process: Standard treatment protocols were not available nor used before the intervention period.

Outcome: In light of the severe underutilization of public health facilities, it was apparent that patients had very low expectations of these services.

Quality of Care: After the Intervention

The quality improvements included in the pilot tests focused primarily on basic issues of quality of design. Health worker qualifications were enhanced through training in standard diagnostic-treatment protocols. Management systems where improved; personnel were trained in the use of essential drugs, and drug and cash management systems. Most attention was placed on ensuring the availability of essential drugs, an improvement deemed to be important by providers and the Ministry of Health, and perceived to be desirable by patients. To some extent, the process attributes of quality were dealt with by putting in place standard diagnostic-treatment protocols; however, not much emphasis was placed on assuring that these processes were followed after the initial training. Information on post-intervention conditions are presented below and listed in ***Exhibit 4-2***:

EXHIBIT 4-2
NIGER: ASSESSMENT OF CHANGES IN THE QUALITY OF HEALTH CARE

	Say	Boboye	Illéla
Structure	*Vaccines & Contraceptives:* about 60-70 percent of facilities at the end of 1993 and 57 percent in the first half of 1994 had vaccines; 60 percent had adequate family planning commodities resulting from World Bank project. *Medical supplies/equip.:* most critical supplies were available in 80 percent of facilities*;* *Personnel:* for nurses 90 percent had some kind of refresher training; 50 percent of other personnel; district doctor had been trained in PHC protocols. *Protocols:* over 86 percent of facilities had diagnostic, treatment, cash and drug management manuals; 50 percent of facilities had the EPI management modules. *Mngmt Info.:* average of 50 percent of facilities had some of the necessary records; 86 percent of facilities had family planning records.	*Vaccines & Contraceptives:* about 60 percent of facilities at the end of 1993 and 80 percent in the first half of 1994 had vaccines; limited family planning commodities (<30 percent). *Medical supplies/equip.:* most critical supplies were available in 76 percent of facilities. *Personnel:* for nurses 65 percent had some kind of refresher training; 27 percent of other personnel; the district doctor had not been trained in PHC protocols. *Protocol:* over 86 percent of facilities had diagnostic, treatment, cash and drug management manuals; about 50 percent had the EPI management modules. *Mngmt Info.:* on average 50 percent of the facilities had some of the necessary records.	*Vaccines & Contraceptives:* about 90 percent of facilities at the end of 1993 and 80 percent in the first half of 1994 had vaccines resulting from the new EPI program; limited family planning commodities (<30 percent). *Medical supplies/equip.:* most critical supplies were available in over 80 percent of facilities. *Personnel:* for nurses, 81 percent had some kind of refresher training; 90 percent of other personnel; the district doctor had been trained in PHC protocols. *Protocols:* 0 percent of facilities had diagnostic, treatment, cash and drug management manuals, but 80 percent of facilities had the EPI management modules. *Mngmt Info.:* about 50 percent of the facilities had some of the necessary records.
Process	*Welcoming:* 75 percent of cases at least one key step done. *History taking:* 75 percent of cases at least one key step done. *Vital signs:* 17 percent of cases as least one key step done. *Diagnostic exam:* less than 25 percent compliance. *Communication:* 18 percent compliance.	*Welcoming:* 98 percent of cases had at least one key step done. *History taking:* 75 percent of cases had at least one key step done. *Vital signs:* 33 percent of cases had at least one key step done. *Diagnostic exam:* less than 25 percent compliance. *Communication:* 22 percent compliance.	*Welcoming:* 70 percent of cases had at least one key step done. *History taking:* 44 percent of cases had at least one key step done. *Vital signs:* 14 percent of cases had at least one key step done. *Diagnostic exam:* less than 25 percent compliance. *Communication:* 6 percent compliance.
Outcome	*Patient satisfaction:* 90 percent satisfied. *Reason for increased use:* 90 percent of patients said improved drug availability.	*Patient satisfaction:* 100 percent satisfied. *Reason for increased use:* 54 percent of patients said improved drugs, 35 percent said free follow-up visits.	*Patient satisfaction:* 86 percent satisfied. *Reason for increased use:* n.a.

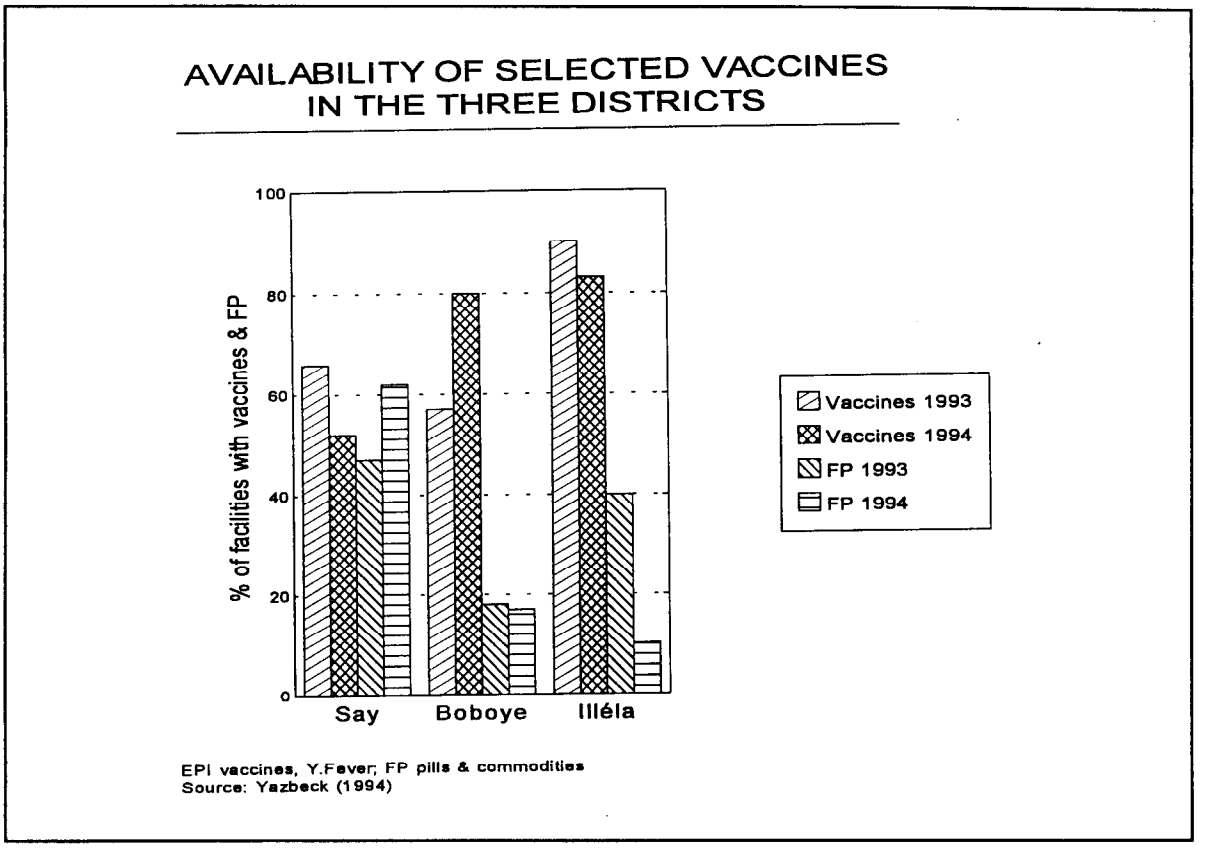
Structure: In all three districts, **the qualifications of health staff** were quite good. In the past two years, doctors in Say and Illéla were trained. For nurses, 65 percent in Boboye, 90 percent in Say and 81 percent in Illéla had been trained. Training appeared slightly lower in Boboye because many health professionals had been newly appointed in 1994.

An assessment of the **availability of essential drugs, vaccines, contraceptives** showed that vaccine supplies had improved from pre-intervention levels when they were generally absent (***Graph 4-1***). The improved availability of drugs in the post-intervention period, however, showed some fluctuations. In Boboye, vaccines were available in 60 percent of facilities in the last six months of 1993 and in 80 percent in the first six months of 1994. In Say, vaccines were available in about 60-70 percent of facilities at the end of 1993 and 57 percent in the first half of 1994, with the exception of polio which was lacking in two-third of the facilities. In Illéla, vaccines stocks were quite good given the establishment of the EPI program at the end of 1993. No managerial or logistical constraints were evident at this early stage of the EPI program. Family planning commodities were generally not available (less than 30 percent of facilities) in Boboye and Illéla. In Say, supplies reached around 60 percent of facilities as a result of a World Bank funded Population project.

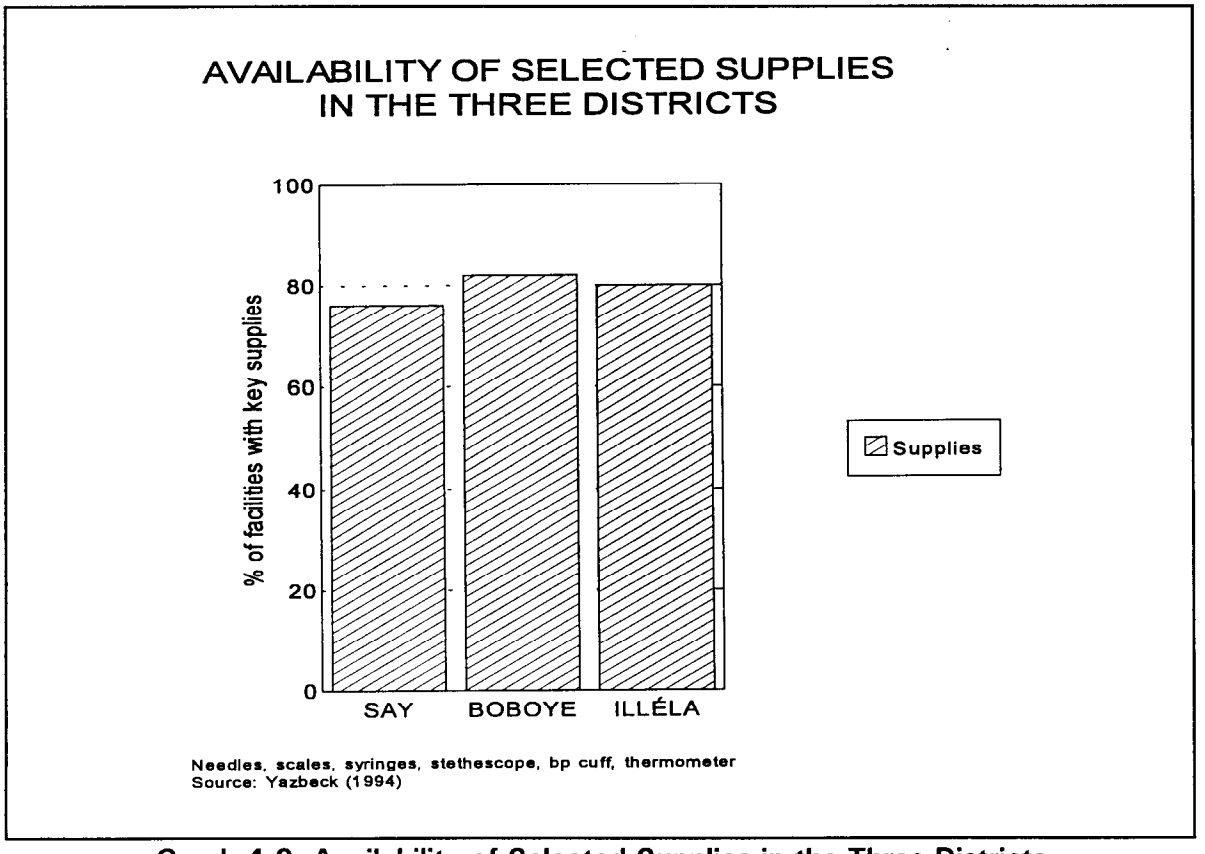
Medical supplies were present in most facilities **(*Graph 4-2***). Hypodermic syringes, weighing scales, stethoscopes, blood pressure cuffs, and thermometers were present in more than 80 percent of facilities. Illéla was well stocked as a result of another USAID Quality Assurance project.

In the two intervention districts, 86-100 percent of facilities had the **diagnostic and treatment protocols** present (***Graph 4-3***). Most also had **manuals for drug and cash management** (over 86 percent). In contrast, 0 percent of facilities in Illéla had any of these three types of guides present. Boboye and Say performed somewhat less well in the availability of the **management modules for the EPI** program. Around 50 percent of the intervention facilities had the guides required, in contrast to 80 percent in Illéla. Various other program records and information system requirements were present about 50 percent of the time, with the exception of family planning records which were available in 86 percent of facilities in Say as a result of the World Bank program (***Graph 4-4***).

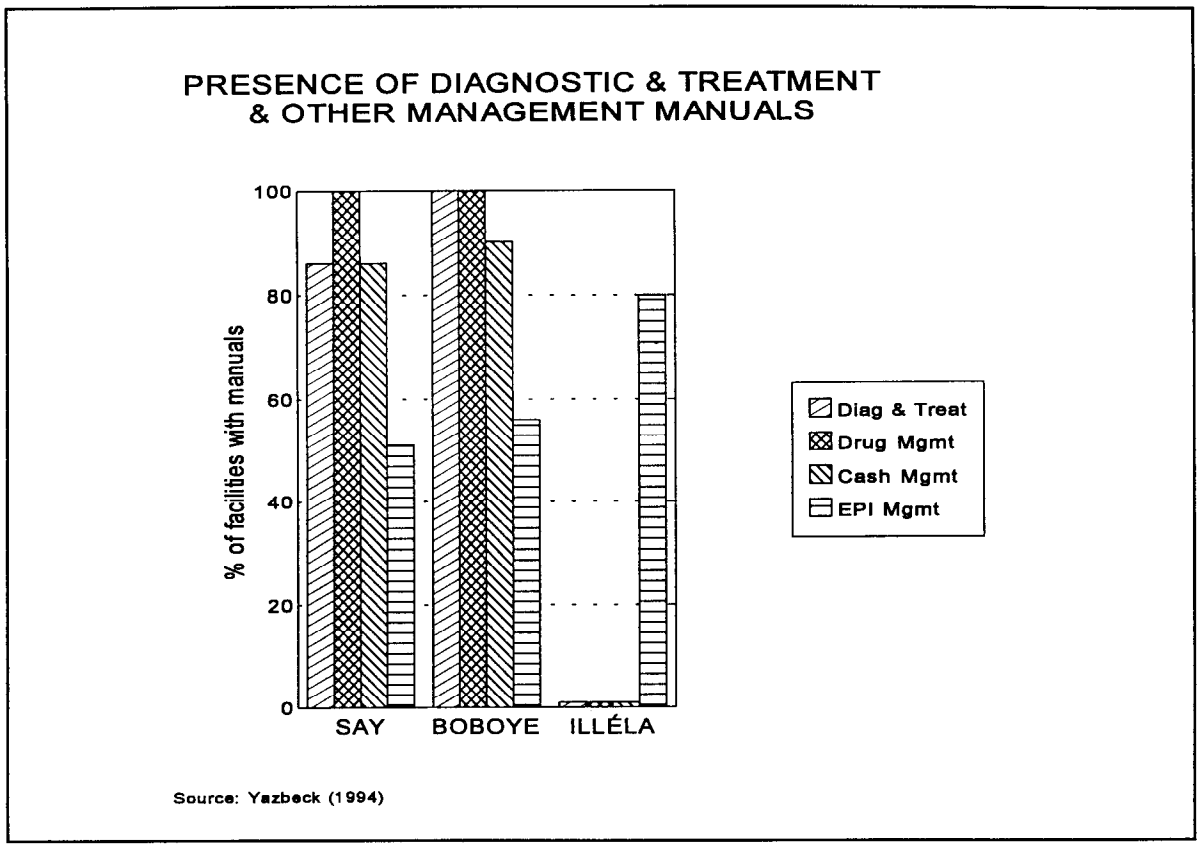
Process: Information on **actual diagnosis and treatment practices** covered five basic parts of the process: welcoming the patient, history taking, monitoring vital signs, diagnostic examination, and communication with the patient (***Graph 4-5***). Health professionals in all three districts, performed adequately in welcoming and understanding the patient. In Boboye 98 percent, in Say 83 percent, and in Illéla 70 percent of the cases included at least one of the critical steps in welcoming the patients. History taking was done well in Boboye and Say with around 75 percent compliance with at least one of the critical steps. In Illéla, only a 44 percent compliance rate was achieved. All three districts performed uniformly poorly in the component for taking vital signs, diagnostic examinations and communication with the patient. At least one vital sign task was completed in only 33 percent of the cases in Boboye, and 17 percent and 14 percent of the cases in Say and Illéla, respectively. Diagnostic examinations reached less than 25 percent compliance in all three districts. Communication was the worst in all three districts with less than 22 percent compliance with at least one critical step. In Illéla, only 6 percent of cases met compliance in this area.



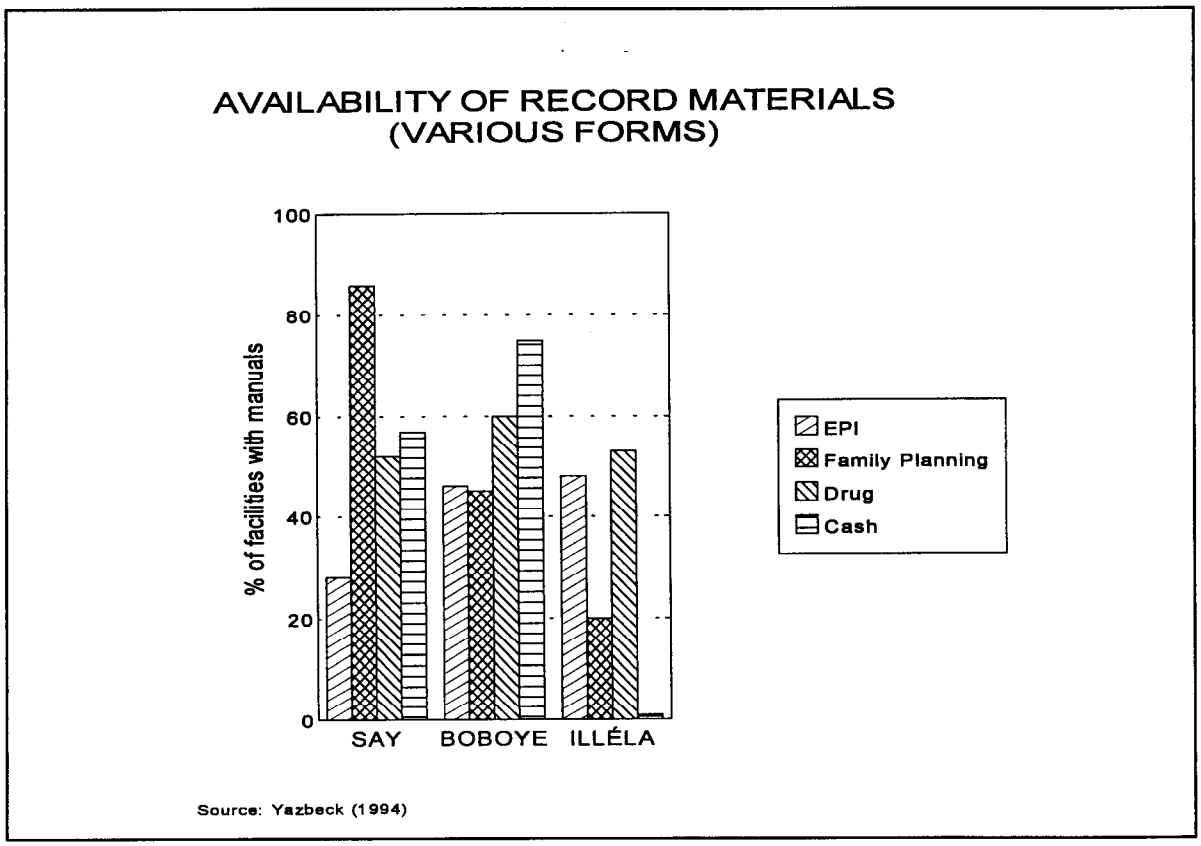
Graph 4-1 Availability of Selected Vaccines in the Three Districts



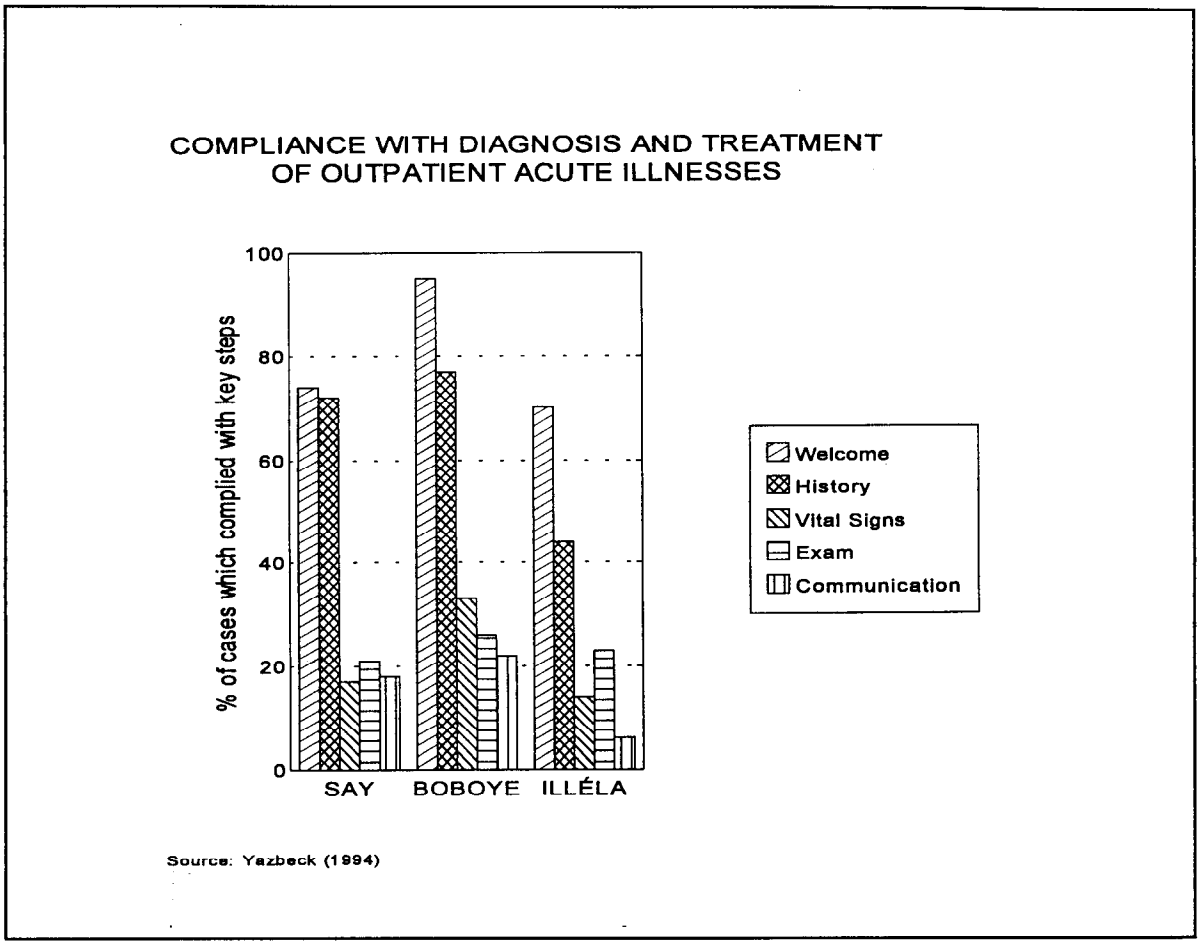
Graph 4-2 Availability of Selected Supplies in the Three Districts



Graph 4-3 Presence of Diagnostic & Treatment & Other Management Manuals

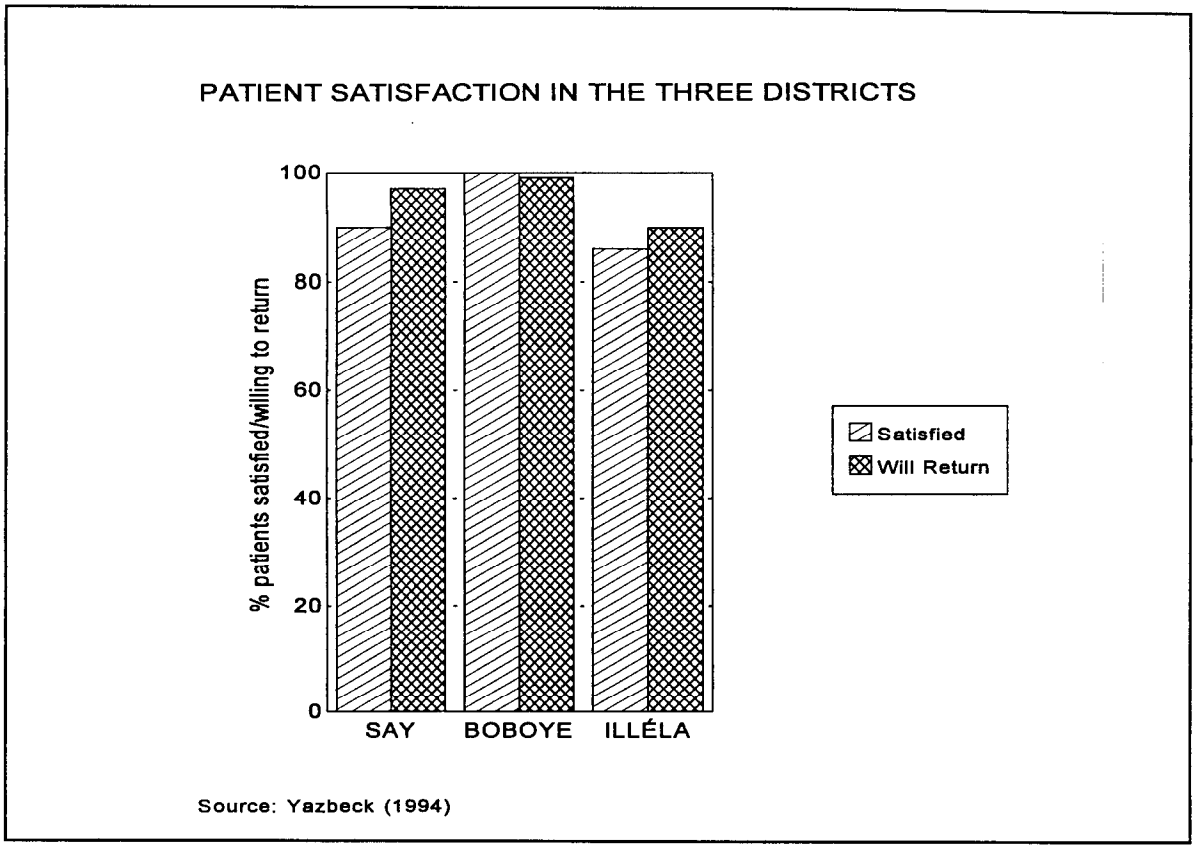


Graph 4-4 Availability of Record Materials (Various Forms)

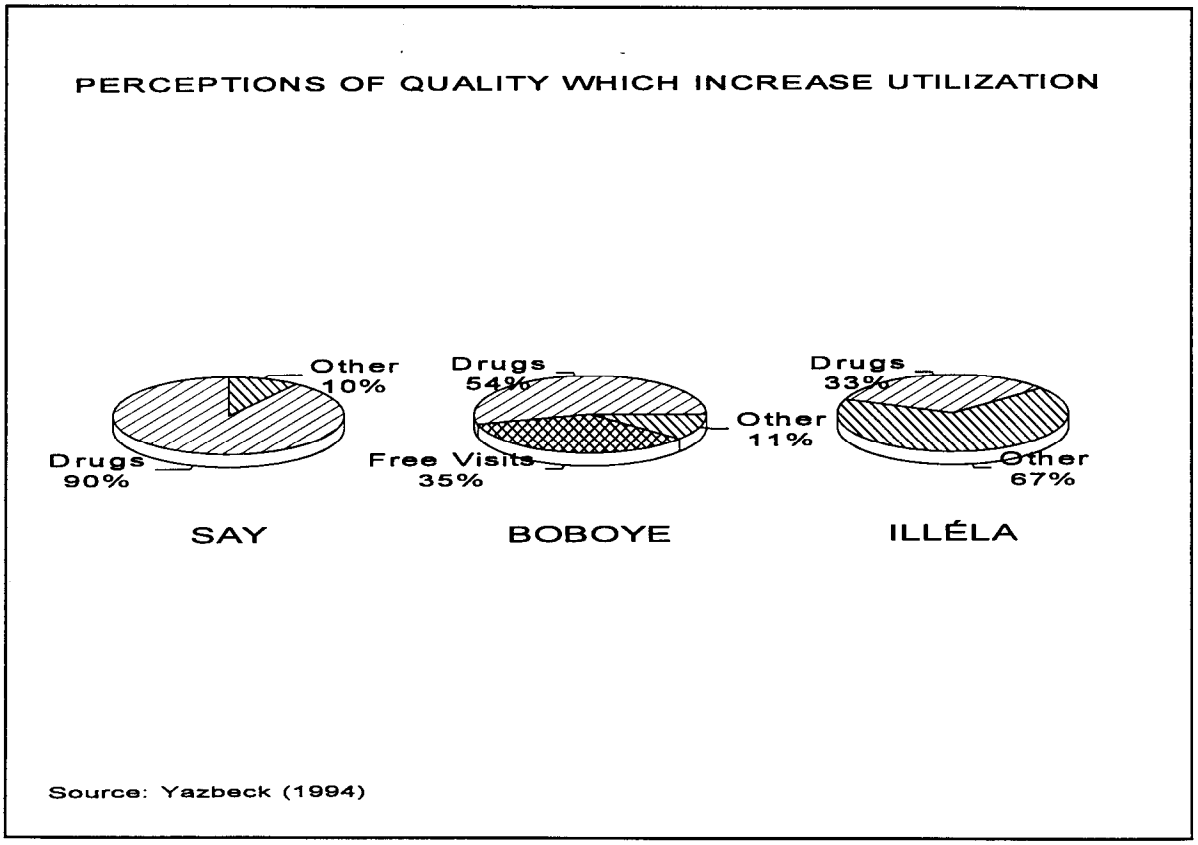


Graph 4-5 Compliance with Diagnosis and Treatment of Outpatient Acute Illnesses

Outcome: In light of the difficulty of measuring changes in health status, outcome measures of quality focused on patient perceptions of quality. This information was collected through patient exit interviews. The survey of **patient perceptions** suggests that quality of care improved as a result of the intervention (***Graph 4-6***). In general, most patients were satisfied with the services received (Boboye 100 percent, Say 90 percent, Illéla 86 percent). Over 90 percent in each district said that they would return to the same facility in the future. In Boboye 100 percent and in Say 77 percent of patients believed that the quality improvements were encouraging more utilization of the facilities (***Graph 4-7***). In Boboye, 54 percent of patients believed that improved availability of medicines was accounting for higher utilization; 35 percent of patients believed that the free follow-up visits were increasing utilization. In contrast, in Say 90 percent of patients believed improved drug availability was leading to higher utilization and 0 percent of patients believed that free follow-up was a factor. This confirms the concern for moral hazard in Boboye. Moral hazard is a rational response by the consumer to a reduction in price of the service below cost at the time of purchase such that utilization increases. In Say, moral hazard was limited to follow-up visits within an episode of acute illnesses. Availability of medicines was cited by 91 percent of the patients in Boboye as a reason for using the public facilities compared to 62 percent in Say. In contrast, in Illéla, 0 percent said the availability of medicines was the most important reason for using the public facility; instead, 100 percent of patients said that they went to the public facility simply because they were sick.



Graph 4-6 Patient Satisfaction in the Three Districts



Graph 4-7 Perceptions of Quality which Increase Utilization

In conclusion, the quality assessment information conducted about one year after the intervention indicated that some quality improvements appeared to be in place in all three districts. A majority of staff had received training in the past two years. Vaccines were present in most facilities. Family planning commodities were generally available only in Say as a result of a World Bank project. Medical supplies were present in most facilities. Guides and manuals for diagnostic and treatment protocols, cash and drug management were in place; however, several deficiencies in measuring vital signs, conducting diagnostic exams, and communicating with patients were particularly notable. Patients seemed to be aware of the quality improvements in medicines and generally felt that this improvement was increasing utilization. Patients appeared satisfied with services, but such results should be taken cautiously since this type of interview rarely uncovers negative attitudes.

4.3.2 Senegal

Senegal: Public and Private Comparisons

This assessment reflects conditions of quality at the beginning of the National Health Policy. Each measurement category is discussed in turn and listed in ***Exhibit 4-3***.

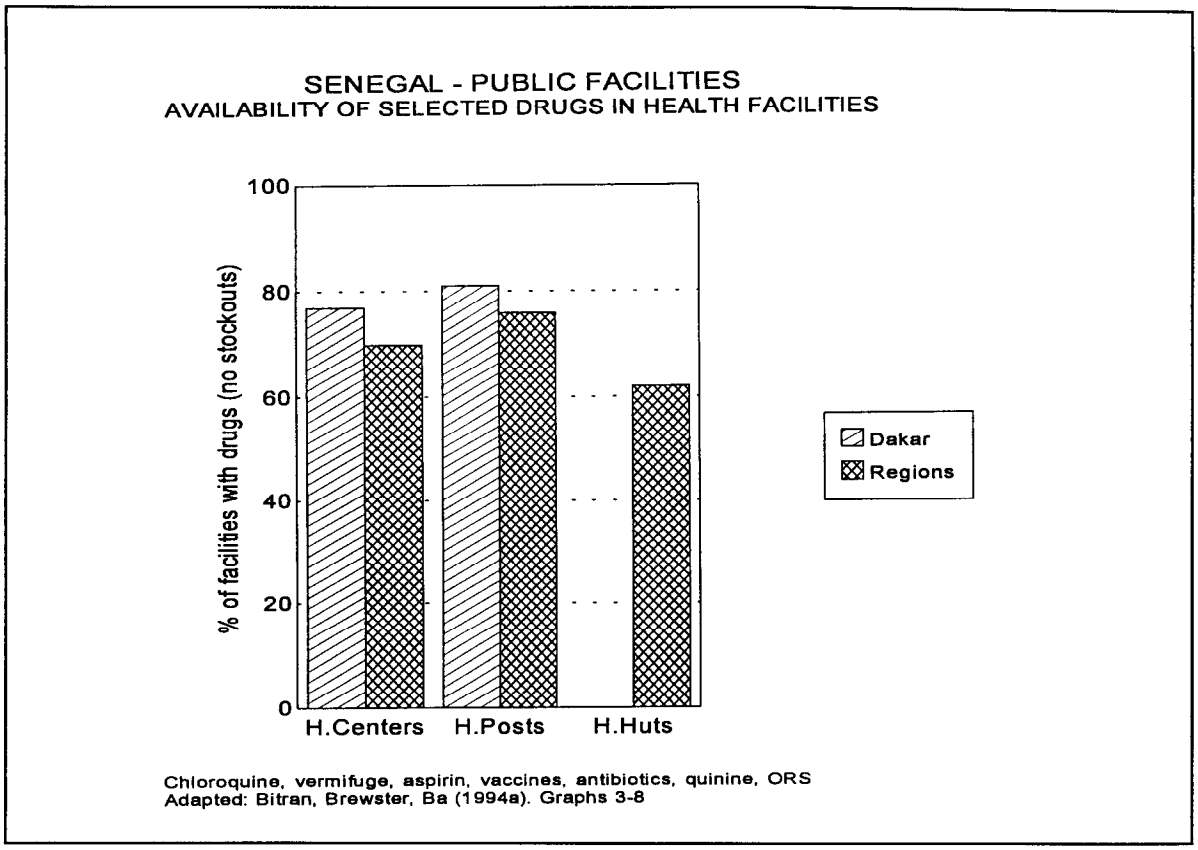
***Structure*:** In the *public sector*, certain deficiencies in the **qualifications of health staff** were observed. On average, less than half of the staff had received any refresher training during the two-year period preceding the survey. Approximately 22-47 percent of medical technicians, 20-31 percent of doctors and 15-62 percent of nurses had any kind of training in the past two years. The higher percentages were from staff in health posts rather than health centers. Information on the *private sector* was not available for this item.

In the *public sector*, an assessment of the **availability of selected essential drugs** including chloroquine, aspirin, antibiotics, oral rehydration salts, vaccines, worm medicine and quinine revealed that most of the facilities faced significant inventory stockouts during the study period (fiscal year 1991). About 40-50 percent of facilities had stockouts during the year (***Graph 4-8***). Duration of these stockouts varied across facilities lasting anywhere from a few weeks to the entire year. Notably, drugs critical to the primary health care program such as chloroquine, oral rehydration salts, and vaccines were frequently out of stock. Drug shortages were less severe in *Dakar*. Information on contraceptives was not included. In the *private sector*, most facilities were well endowed with drug stocks (***Graph 4-9***). For-profit providers in Dakar and Catholic posts in Dakar and in the regions rarely had inventory ruptures during the study year. However, stockouts were frequent in company clinics (20-40 percent of facilities) and "other private providers" (30-60 percent of facilities).

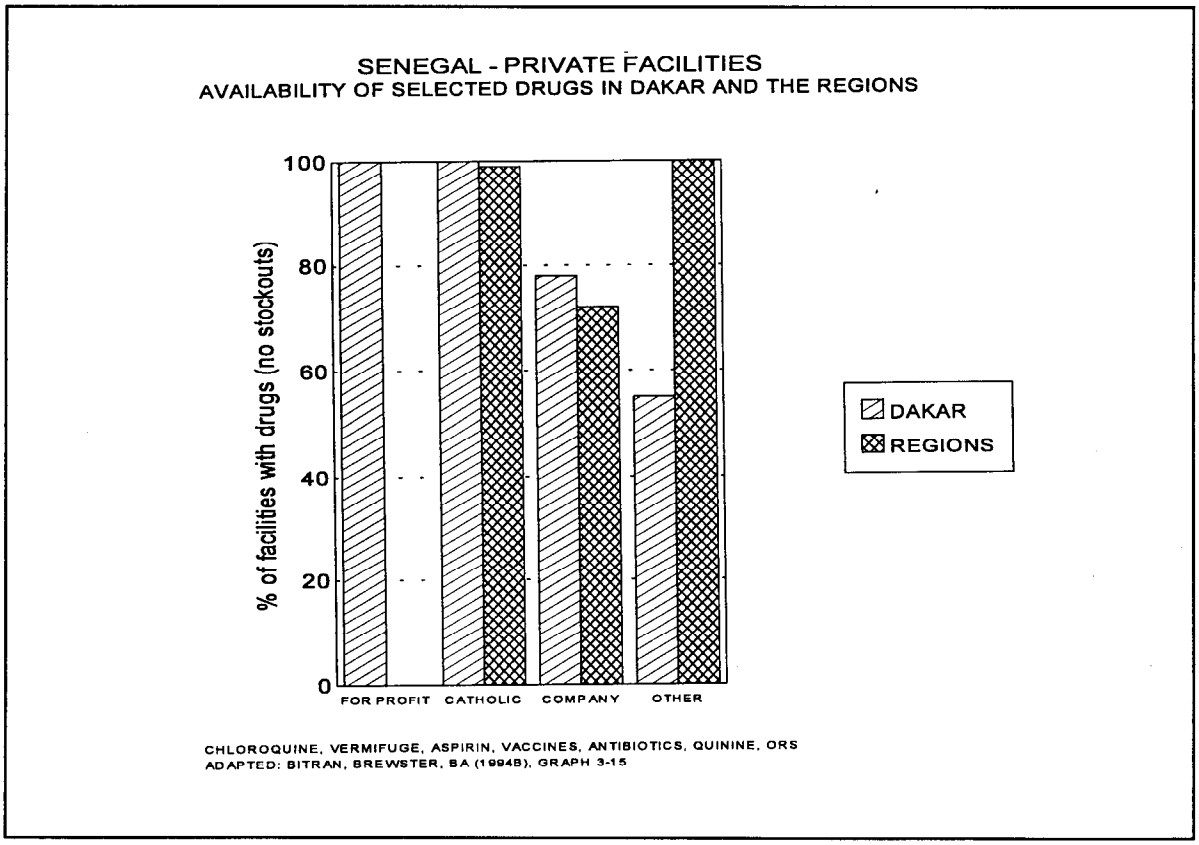
A majority of *public* facilities lacked critical **medical supplies** (***Graph 4-10***). Thermometers, micro-slides and dyes for lab tests were lacking in 20-40 percent of the facilities. As with medical supplies, shortages were less severe in *Dakar*. In the *private sector*, for-profit and Catholic facilities never lacked any of these supplies (***Graph 4-11***). Company clinics also performed well. In contrast, "other providers" often lacked these supplies.

EXHIBIT 4-3
SENEGAL: ASSESSMENT OF QUALITY OF HEALTH CARE

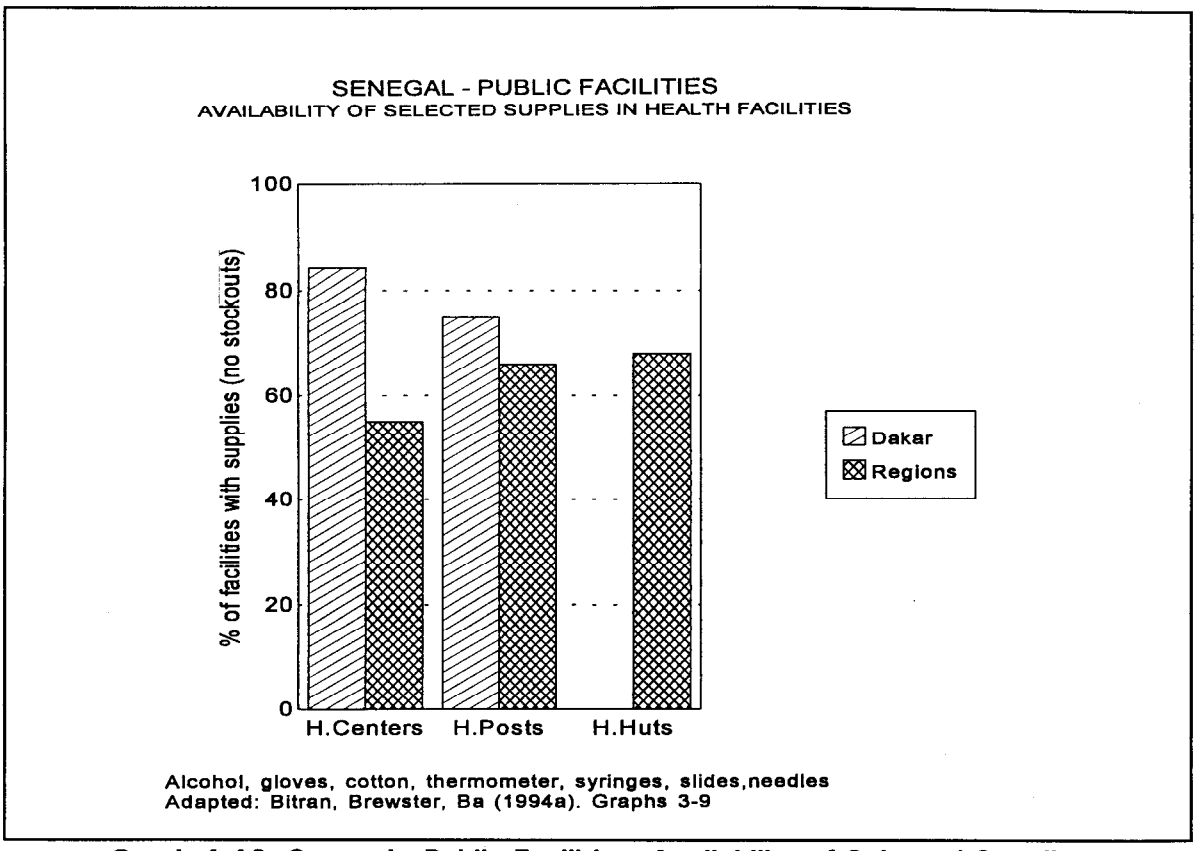
	SENEGAL	
	PUBLIC SECTOR	**PRIVATE SECTOR**
Structure	*Drugs:* frequent stockouts; about 40-50 percent of facilities with s/o during the year. *Medical supplies/equip.:* frequent stockouts (e.g. 50 percent of facilities without thermometer). *Personnel:* infrequent personnel training;(e.g. <50 percent staff in past 2 yrs) . *Protocols:* not generally present. *Mngmt info.:* observations revealed inadequate information systems, especially on costs and revenues at facility and ministry levels. *Dakar:* facilities here less affected with stockouts.	*Drugs:* rare stockouts in for-profit and Catholic, stockouts in company (about 20-40 percent of facilities) & "other provider" clinics (30-60 percent). *Medical supplies/equip.:* best in for-profit & Catholic & company clinics, "other providers" lacked some supplies (40 percent of facilities). *Personnel:* no data. *Protocols:* not generally available. *Mngmt info.:* no data. *Dakar*: facilities here less prone to stockouts.
Process	*Fever & diarrhea*: treatment practices indicated poor provider-patient communication (75 percent of cases), omitted tests (60 percent of patients not given blood test for malaria), & diagnostic questions & exams (only 5 percent screened for ear, throat, resp, infections). *Routine medical procedures* (baby weighing and vaccines): Steps were done correctly 50-60 percent of the time with the exception of handwashing (less than 15 percent).	*Fever & diarrhea*: For-profit providers showed high compliance (80 percent in all aspects); the other 3 provider types showed mediocre compliance with norms including poor provider-patient communication (not done 60-70 percent of the time), omitted tests (skipped 50 percent of the time), diagnostic questions & exams. *Routine medical procedures*: steps were done correctly a majority of the time with the exception of handwashing (less than 30 percent). For-profits and Catholic posts performed best, company clinics performed less well (about 70 percent compliance).
Outcome	*Patient satisfaction:* Over 80 percent of patients satisfied; except for hospitals (65 percent), 80 percent of patients willing to return to facility. *Staff perceptions:* About 60 percent of staff perceived care to be average (hospitals 66 percent, centers 73 percent, posts 63 percent, huts, 52 percent).	*Patient satisfaction:* almost 100 percent satisfied with the exception of "other clinics." *Staff perceptions:* overall perceived care to be good self-perceptions of good care were for-profits (93 percent), Catholic (79 percent), company (74 percent), other providers (26 percent).



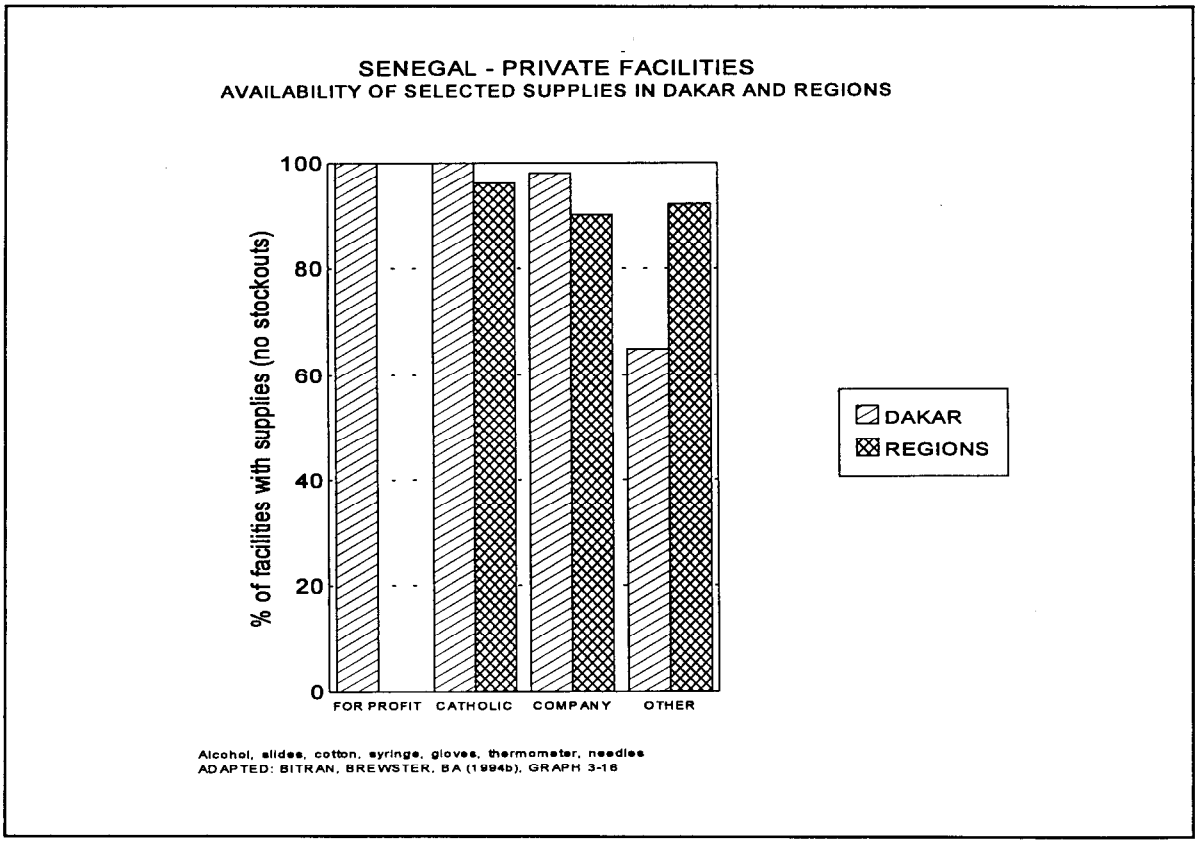
Graph 4-8 Senegal—Public Facilities: Availability of Selected Drugs in Health Facilities



Graph 4-9 Senegal—Private Facilities: Availability of Selected Drugs in Dakar and the Regions



Graph 4-10 Senegal—Public Facilities: Availability of Selected Supplies in Health Facilities



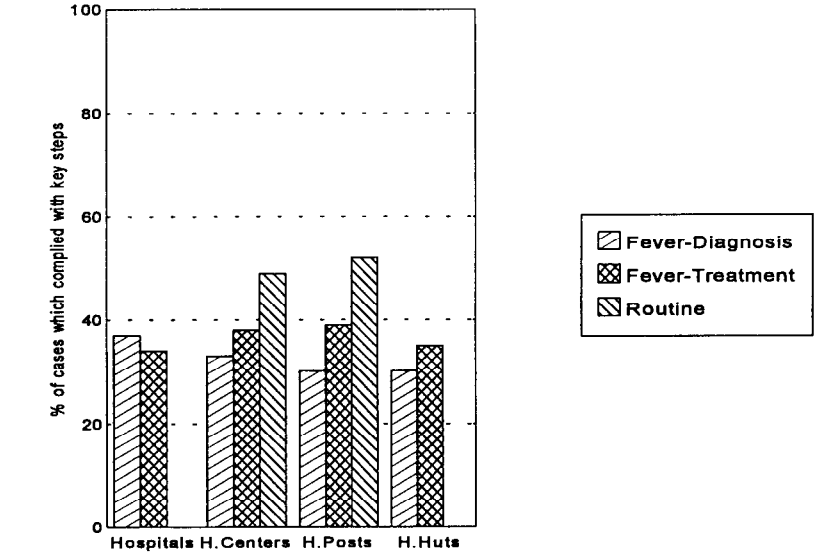
Graph 4-11 Senegal—Private Facilities: Availability of Selected Supplies in Dakar and the Regions

In the *public sector*, most health personnel did not work from **diagnosis and treatment protocols**. In the *private sector*, the evidence suggests that such protocols were not normally available. **Management information systems** were felt to be in poor condition in public facilities and at the ministry level. Reliable data on costs and revenues were seldom available.

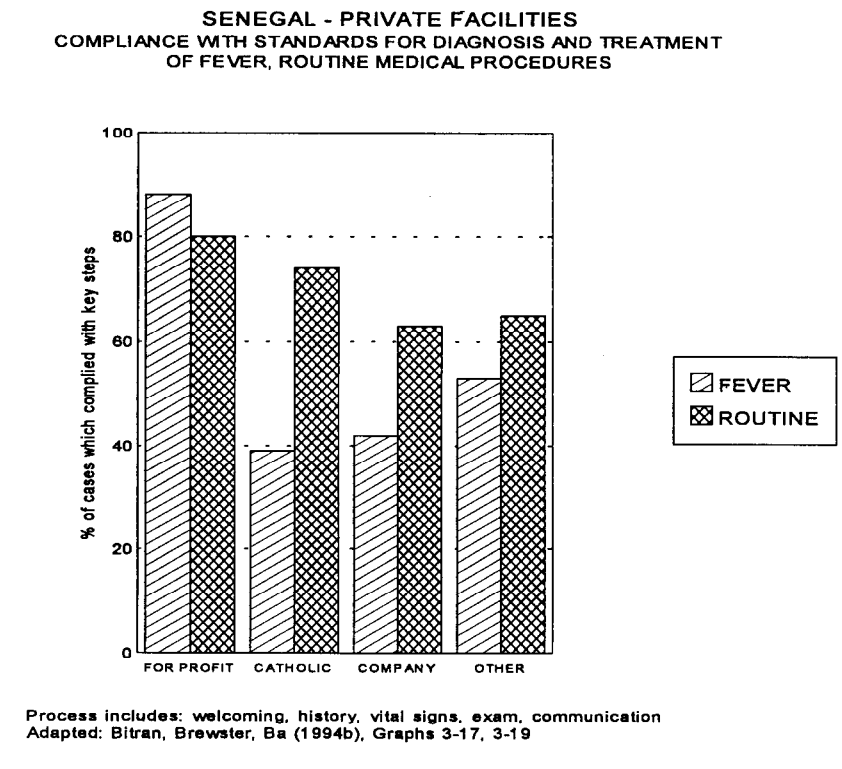
Process*:** The process of care was investigated by comparing **actual treatment practices with norms** agreed upon by a team of Senegalese doctors and nurses (Graph 4-12***). For those reporting fever or diarrhea, several deficiencies were observed including poor communication of medical staff with patients. Adequate communication occurred in only 25 percent of the cases. Implementation of monitoring vital signs, history taking, and diagnostic exams were done poorly. For example, outside of hospitals fewer than 5 percent of patients with fever were screened for respiratory, ear or throat infections. Medical staff failed to perform blood tests for malaria 60 percent of the time. For routine medical procedures such as baby weighing and vaccinations, procedures were done correctly over 80 percent of the time, with the exception of a few steps such as hand washing which were done less than 15 percent of the time. On average, nurses demonstrated the highest levels of compliance while doctors had the lowest. In the *private sector*, highest compliance for diagnosis and treatment of fever and diarrhea was observed among for-profit providers, who performed a majority of the tasks (***Graph 4-13***). Compliance among the three other private provider types was poor. Standard tasks were skipped 50 percent of the time. Patient-provider communication was poor (omitted 60-70 percent of the time). Routine medical care appeared best for for-profit dispensaries and Catholic posts and lowest at company clinics (about 70 percent compliance).

Outcome: Outcome measures of quality for the Senegal study focused on patient and staff perceptions of quality. This information was collected through patient and staff interviews. **Patient perceptions** of quality varied by type of *public* facility: about 80 percent of patients were satisfied at non-hospitals, 65 percent were satisfied with hospitals (***Graph 4-14***). However, 80 percent of patients reported being willing to return to the facility in the future. Geographic proximity was frequently cited as a reason for using a particular public facility. **Staff perceptions** of quality reflected frustration in the lack of supplies, medicines, and personnel (***Graph 4-15***). About 60 percent of the staff thought quality was average, although there was some variability in perceptions across public facilities (hospitals 66 percent, health centers 73 percent, health posts 63 percent and health huts 52 percent). Only 4-24 percent of the staff thought care was good. In the *private sector*, 100 percent of patients were generally satisfied with the health services received (***Graph 4-16***). Staff perceptions of quality varied among private providers. Best self-perception was found among for-profit providers followed by Catholic and company clinics. Staff in "other clinics" found their care to be unsatisfactory. In comparison to the public sector, more staff thought their care was good (above average): for-profits (93 percent), Catholics (79 percent), company clinics (74 percent), "other" providers (26 percent) (***Graph 4-17***).

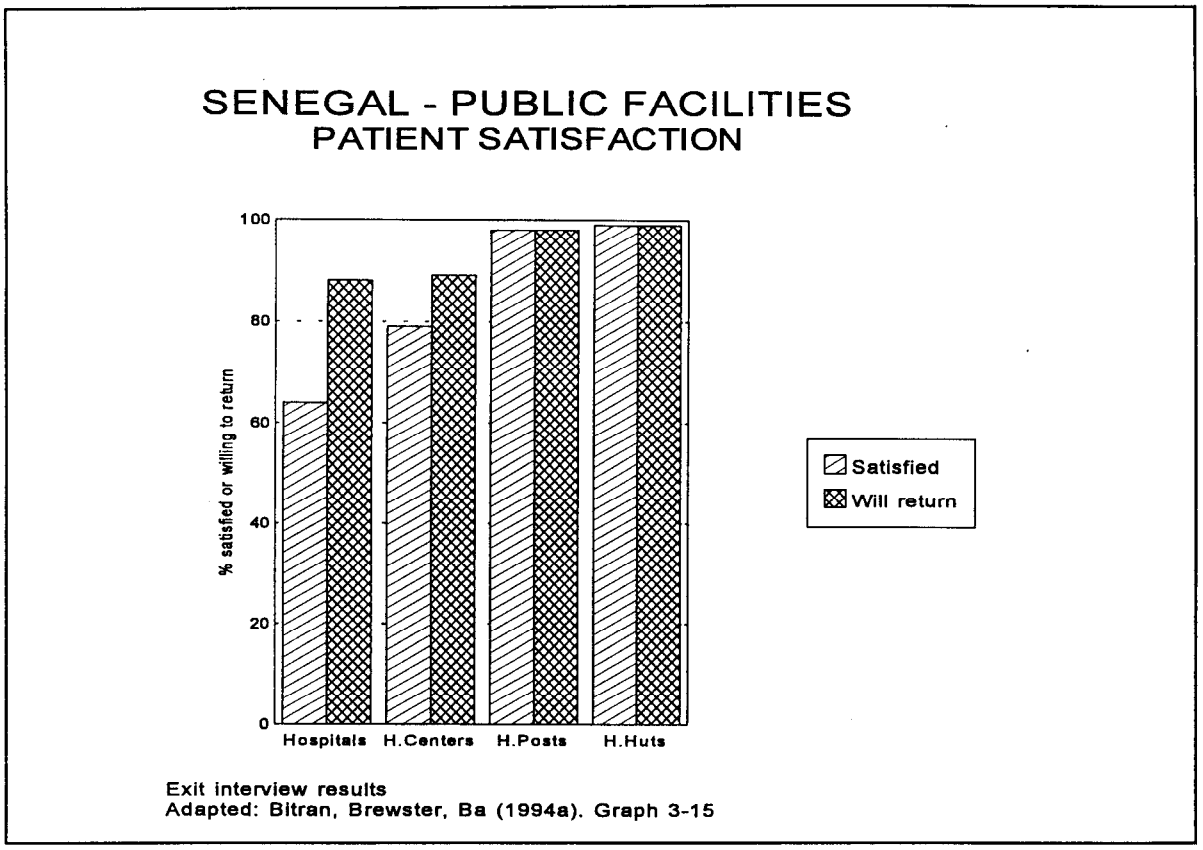
From this evidence, there seemed to be important **differences in patient and provider perceptions**. Patients appeared to be more satisfied with the care they received than providers were of the care they rendered. Providers tended to focus on the availability of supplies and drugs in making their assessments. Patients considered a variety of factors including economic, geographic, and psychologic reasons. However, one should be cautious in drawing conclusions about perceptions because it has been found that in many sub-Saharan African settings, patients rarely make negative statements in interview settings. Given this cultural attitude, it was not surprising to find fairly high satisfaction scores; however, this satisfaction did not seem to be consistent with the severe problems being experienced by the health sector.



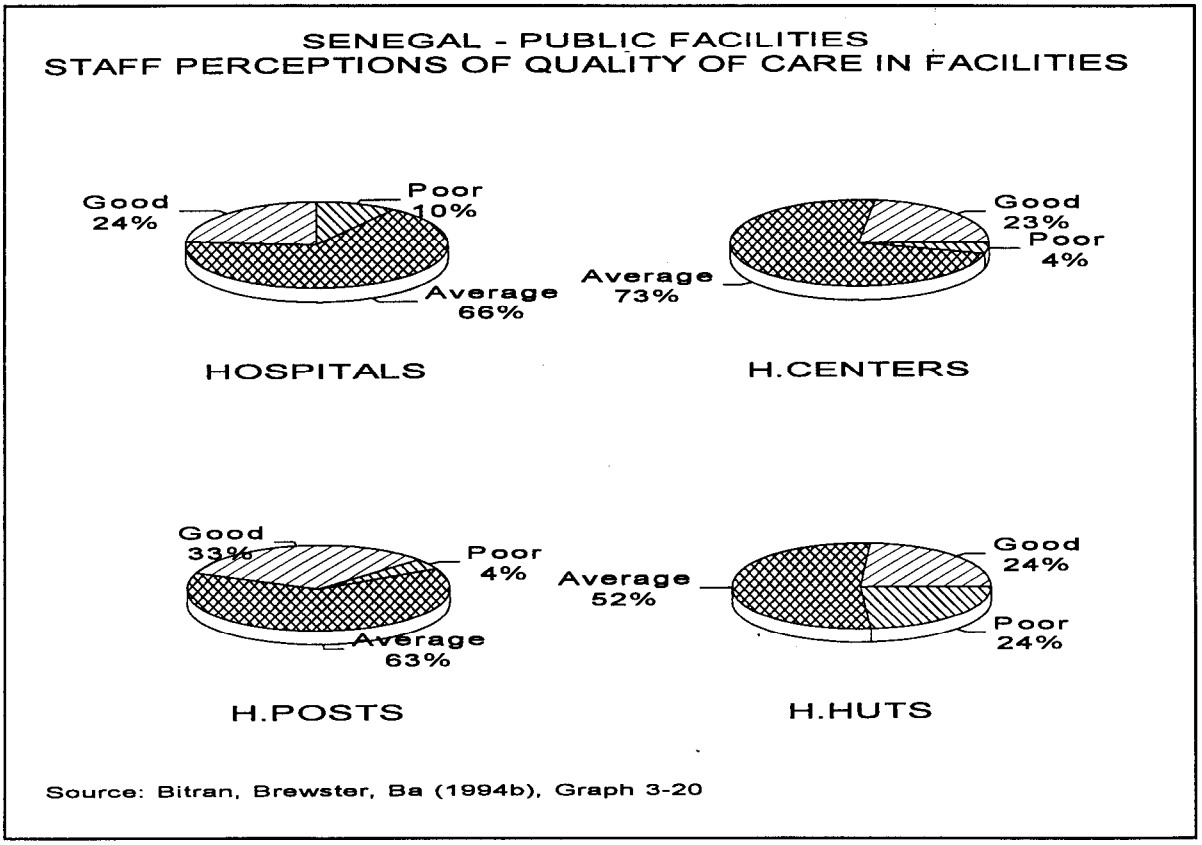
Graph 4-12 Senegal-Public Facilities: Compliance with Standards for Diagnosis and Treatment of Fever, Routine Medical Procedures



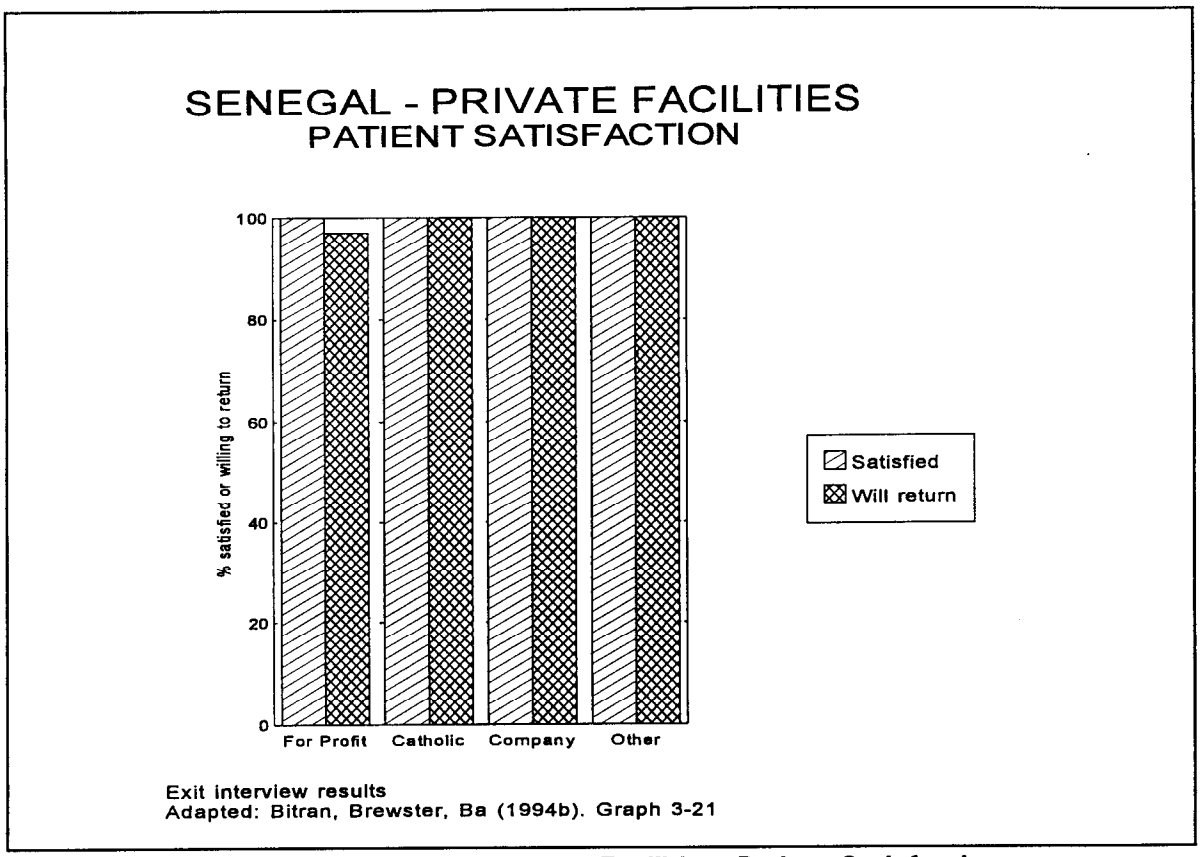
Graph 4-13 Senegal-Private Facilities: Compliance with Standards for Diagnosis and Treatment of Fever, Routine Medical Procedures



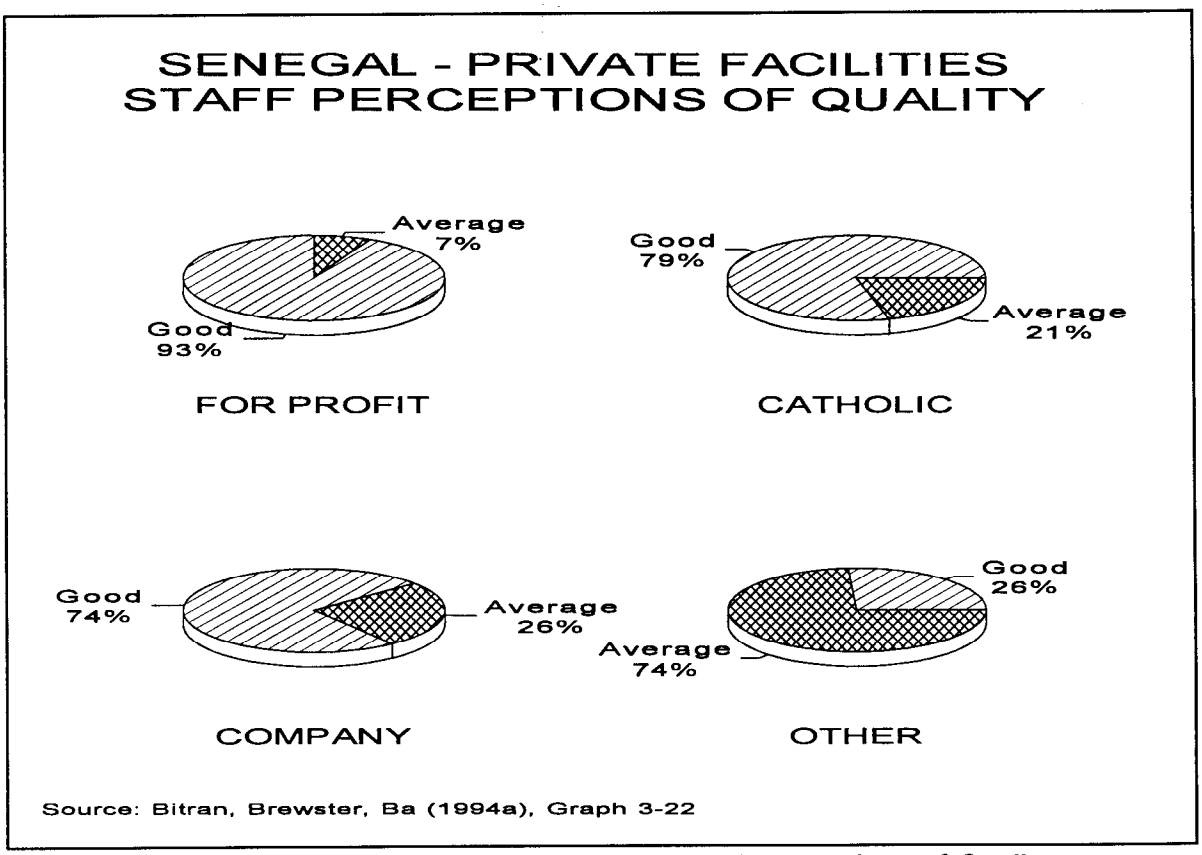
Graph 4-14 Senegal-Public Facilities: Patient Satisfaction



Graph 4-15 Senegal-Public Facilities: Staff Perceptions of Quality of Care in Facilities



Graph 4-16 Senegal-Private Facilities: Patient Satisfaction



Graph 4-17 Senegal-Private Facilities: Staff Perceptions of Quality

To summarize, the assessments of quality in Niger and Senegal showed similar problems. Baseline conditions revealed severely deteriorated public health systems experiencing frequent stockouts of drugs, supplies and equipment. Many of these deficiencies related to quality of design; that is, putting in place the basic resources required to implement a service. The improvements required were almost less an issue of quality improvement than a concern for establishing the basic existence of a service.

In Niger, the pilot projects appeared to be successful in improving many structural aspects of quality, but deficiencies in the implementation of the diagnostic and treatment protocols were still evident. In both Senegal and Niger, health professionals appeared to be particularly weak in taking histories, monitoring vital signs, conducting diagnostic exams, and communicating with the patients.

In Senegal, the public sector experienced frequent stockouts of drugs, supplies, and equipment. Provider compliance with protocols for fever and diarrhea were generally poor, although compliance with routine procedures was better. Patients appeared generally satisfied, although the validity of the data is questionable. Health staff perceived the care they offered to be average or below average, compared to other facilities.

The Senegalese private sector performed better than the public sector in several respects. Stockouts of drugs, equipment, and supplies were much less frequent. Compliance with routine medical procedures was somewhat better in private facilities. Both public and private providers could significantly improve in implementing fever and diarrhea protocols. Public facility staff perceived their care to be average or below in contrast to their private sector counterparts who generally perceived their care to be good. Patients declared that they were satisfied regardless of the provider, again, a highly suspect result.

Senegal: By Type of Public Facility

The results of the quality assessment in the public sector were quite similar across the various types of public facilities (hospitals, health centers, health posts, health huts). No single type of facility demonstrated any significantly better care. This is discussed below and summarized in ***Exhibit 4-4*** and shown in ***Graphs 4-8, 4-10, 4-12, 4-14, 4-15***.

Structure: In the regions, **drug** stockouts were generally pervasive across all health facilities, although health posts fared somewhat better. Health centers appeared to experience the worst stockouts. Similarly for **supplies**, health posts and health huts did better than health centers. No information was available for hospitals.

Process: All facilities performed poorly for diagnosis and treatment of **fever and diarrhea**. For **routine medical procedures** all facilities did better with 50 percent or more compliance.

EXHIBIT 4-4
SENEGAL: PUBLIC SECTOR QUALITY BY TYPE OF FACILITY

	HOSPITAL	HEALTH CENTER	HEALTH POST	HEALTH HUT
Structure	*Drugs:* data not available *Supplies:* data not available	*Drugs:* poor performance with 50 percent experiencing stockouts of chloroquine & ORS Supplies: poor performance with 55 percent reporting availability	*Drugs:* somewhat better than health huts & health centers Supplies: somewhat better than health centers (80 percent availability)	*Drugs:* 30-50 percent of facilities reporting stockouts *Supplies:* somewhat better than health centers or health posts (about 70 percent availability)
Process	*Fever & diarrhea:* poor compliance (<40 percent) *Routine medical :* 80 percent compliance	*Fever & diarrhea:* poor compliance (<40 percent) *Routine medical:* 50 percent compliance	*Fever & diarrhea:* poor compliance (<40 percent) *Routine medical:* 50 percent compliance	*Fever & diarrhea:* poor compliance (<40 percent) *Routine medical:* 50 percent compliance
Outcome	*Patient satisfaction:* 65 percent of patients satisfied, 80 percent of patients willing to return *Staff satisfaction:* 66 percent of staff perceived care to be average	*Patient satisfaction:* 80 percent of patients satisfied and willing to return *Staff satisfaction:* 73 percent of staff perceived care to be average	*Patient satisfaction:* 80 percent of patients satisfied and willing to return *Staff satisfaction:* 63 percent of staff perceived care to be average	*Patient satisfaction:* 80 percent of patients satisfied and willing to return to facility *Staff satisfaction:* 52 percent of staff perceived care to be average.

Outcome: In terms of **patient satisfaction**, hospitals fared worse with 65 percent of patients expressing satisfaction compared to 80 percent for each of the other facilities. However, for all facilities, 80 percent of patients said they would return to the facility in the future. **Provider satisfaction** was highest for health centers (73 percent of staff said care was average), followed by hospitals (66 percent) and health posts (63 percent). Health huts appeared to generate the least satisfaction (52 percent).

Senegal: By type of Private Provider

In the private sector, there was some important variation in quality among types of private providers. Generally, for-profit and Catholic providers offered the best care. They had no stockouts, good compliance and satisfied staff and patients. Company clinics and "other" private providers suffered from occasional stockouts, poor compliance with protocols. Staff of "other providers" were particularly dissatisfied with the care they offered. This information is summarized in ***Exhibit 4-5*** and in ***Graphs 4-9, 4-11, 4-13, 4-16, 4-17***.

Structure: In the regions, availability of **drugs** was generally good in the private sector with both for-profits and Catholic facilities rarely experiencing stockouts. Company clinics fared less well with 55-95 percent of facilities having drugs available. About 40-70 percent of facilities for "Other" providers had stockouts of selected drugs. **Supplies** followed a similar pattern with for-profits, Catholic, and company clinics rarely experiencing stockouts. "Other" providers (about 70 percent) were missing some type of equipment.

Process: For **fever and diarrhea**, for-profits complied with expected treatments 80 percent of the time; Catholic, company, and "other" private facilities performed somewhat less (standard tasks skipped 50 percent of the time). Similarly, for **routine care**, for-profits complied best (minimum 80 percent of cases), followed by Catholic (minimum 70 percent), company clinics and "other" providers (minimum 50-55 percent) which included the Red Cross, Muslim, and army facilities. Handwashing was uniformly poor with less than 30 percent performing this step.

Outcome: Overall, **patient satisfaction** was high and most would return for services. **Staff perceptions** were highest for for-profits (93 percent good), followed by Catholic staff (79 percent good), and company clinics (74 percent good). Staff of "other" clinics were dissatisfied with the care they rendered. Only 26 percent of staff said their care was good.

In general, the data showed that several essential resource requirements necessary for implementing the basic services were not yet in place or were in the process of being put in place. In part, then, it might be somewhat premature to emphasize conformance to expected processes if the basic resources required to implement these processes were not in place. However, the availability of such resources is a necessary but not a sufficient condition for acceptable quality of care to take place.

EXHIBIT 4-5
PRIVATE SECTOR QUALITY BY TYPE OF PROVIDER

	FOR-PROFIT	CATHOLIC	COMPANY CLINICS	"OTHER" PROVIDERS
Structure	*Drugs:* no stockouts (100 percent available). *Supplies:* no stockouts (100 percent available).	*Drugs:* no stockouts (100 percent available). *Supplies:* no stockouts (100 percent available).	*Drugs:* some stockouts, (est. 55-95 percent available). *Supplies:* minimal stockouts, (est. 90 percent available).	*Drugs:* some stockouts in Dakar (est. 40-70 percent available); regions had 100 percent available. *Supplies*: some stockouts (approx. 70 percent available).
Process	*Compliance with fever & diarrhea protocols:* best compliance of all private providers (compliance of 80 percent). *Routine care:* highest compliance (80+ percent compliance), poor handwashing (<30 percent).	*Compliance with fever & diarrhea protocols:* poor, standard tasks skipped w/45 percent of patients, & skipped communication w/30 percent of patients. *Routine care:* good compliance (70+ percent compliance), poor handwashing (<30 percent).	*Compliance with fever & diarrhea protocols*: poor, standard tasks skipped w/45 percent of patients, skipped communication w/40 percent of patients. *Routine care:* low compliance (65+ percent compliance), poor hand washing (<15 percent).	*Compliance with fever & diarrhea protocols:* poor, standard tasks skipped 50 percent; communication w/50 percent of patients. *Routine care:* low compliance (50+ percent compliance), poor hand washing (<15 percent).
Outcome	*Patient perceptions:* generally satisfied, most would come back; lowest satisfactions: availability of medicines and price. *Staff* perceptions: highest satisfaction, 93 percent good.	*Patient perceptions:* generally satisfied, most would come back. *Staff perceptions:* 79 percent good.	*Patient* perceptions: generally satisfied, most would come back; lowest satisfaction: availability of medicines and price. *Staff perceptions:* 74 percent good.	*Patient* perceptions: generally satisfied, most would come back; lowest satisfaction: availability of medicines, waiting. *Staff perceptions:* 26 percent good.

5.0 QUALITY AND COSTS

5.1 CONCEPTS

Relationships between quality and costs can be quite complex (Wouters, 1994). The Total Quality Management literature offers some useful insights. Two questions are particularly useful in assessing the cost implications of quality improvements:

(1) What are the customer/provider expectations about the standard of care to be offered? and,

(2) Given the accepted standard of care, what quality improvements are required to be able to implement the standard right the first time?

For the first question, the cost issue pertains to identifying the resource requirements implied by the standard of clinical care or support service. One can think of these costs as the "costs of doing business' or the 'resource requirements associated with a standardized process." In one respect, these costs are not really connected with issues of quality since they deal with the basic concern of establishing the existence of a service or product. In another respect, however, quality becomes an integral part when a range of standards or process design specifications are under consideration. In the Total Quality Management literature, selecting among a set of possible standards is known as Quality of Design (Campanella, 1990; Morse et al., 1987). The relationship between Quality of Design and costs is generally positive. It always costs something to establish the service, beginning with the critical resource requirements. When looking at issues of Quality of Design, cost analysis may include cost-effectiveness analysis to select the most effective, yet efficient standard of service and/or basic resource costing to determine the costs of the resources needed to put the standard into operation.

Quality of Implementation or Conformance focuses on correct implementation of the design specified (Campanella, 1990; Morse et al., 1987). It assumes that an acceptable design or standard is already in place. In resource deficient environments, basic infrastructure and/or standards may not be in place; in these cases, analyzing processes of treatment or support services may be premature. Deming focuses on quality of conformance as a means to reduce costs (Walton, 1986). Higher quality of conformance means fewer defective services or products. Fewer defective services or products means less waste of materials, labor, and/or equipment time.

In studies of quality, costs, and efficiency, it is useful to know whether the quality improvements being considered pertain to Quality of Design and/or Quality of Implementation. The Senegal and Niger studies will be discussed in these terms.

5.2 FINDINGS

The quality improvements undertaken in Niger and the potential areas for improvement identified through the assessment of quality in Senegal emphasized, at least initially, aspects of Quality of Design, although Quality of Implementation should become increasingly important. As noted in the conceptual framework, the cost implications of making improvements in aspects of design or implementation may be quite different. Often with Quality of Design improvements, additional resources will be required when basic inputs are missing; however, cost savings might occur if design improvements call for more cost-effective

protocols/specifications. With improvements in Quality of Implementation, cost savings are more likely. When processes are carried out right the first time, complications, adverse effects, or waste are averted.

This discussion of quality and costs is not able to produce detailed estimates of the cost implications of selected quality improvements. Limited cost information was available for selected improvements in Niger; otherwise, costs are discussed in general terms, outlining expected fixed and variable cost consequences of quality improvements. Fixed costs are those which remain constant regardless of the output level. Variable costs are directly related to the number of patients treated. ***Exhibit 5-1*** gives some suggestions of the fixed and variable cost requirements of quality improvements.

5.2.1 Niger—Some Specific Costs

The Niger cost recovery pilot projects incurred sizeable costs, both in planning and implementation. Cost information was available on incremental drug and administrative resource requirements. Analysis of the facility inventory records showed no major disruption in the availability of drugs at facilities during the first six months (Diop, et al., 1993). Prescriptions of medicines increased substantially. The average value of medicines used, based on the first six months, was almost three times the usual six-month allowance for medicines allocated in the district's budget. In Boboye during the pilot project, ten public health facilities used medicines totaling 6,746,000 FCFA compared to the historical six-month budget of 2,240,000 FCFA. Say used 6,565,000 FCFA of medicines in five months of the pilot project compared to a historical six-month budget of 2,500,000 FCFA. These are variable costs.

One might not typically think of the administrative costs associated with cost recovery as a quality improvement; however, without proper functioning of this support system, the provision of health services would suffer. Improving non-clinical support systems is fundamental to providing quality health services. In Niger, the incremental administrative costs, including printing costs, for materials, supplies, and salary costs for the new management system were sizeable. In Boboye, which had ten facilities, monthly administrative costs rose to between 760,000 FCFA and 780,000 FCFA. In the Say district, the eight facilities had administrative costs between 560,000 FCFA and 630,000 FCFA. For the most part, administrative costs consisted of salaries for the administrators. These are essentially fixed costs. The costs for administrative materials could be reduced substantially. The most expensive cost in this regard is the large number of receipt booklets used. They could be purchased wholesale. Some of the administrative costs are variable if they depend on patient-level records, billing, receipts and the like.

5.2.2 General Expectations About Costs

Expectations about the remaining costs are very general, but should hold for both Niger and Senegal. To improve the Quality of Design, both countries would be expected to incur significant fixed costs to cover the following items: staff training (both initial and continuing) in the use of diagnostic and treatment protocols, acquisition and maintenance of durable medical equipment, creation and implementation of diagnostic and treatment protocols, establishment of management information systems (including financial management), and information systems to providers and patients about the quality of health services. In Niger, some additional fixed costs might be needed to put in place the administrative personnel necessary to run the cost recovery system. In Senegal, there appeared to be opportunities to either reduce or reallocate personnel. Variable costs would increase as a result of improving the availability of essential drugs, disposable medical supplies, recording keeping (both clinical and financial), and some aspects of health communication/information programs.

EXHIBIT 5-1
EXAMPLES OF FIXED AND VARIABLE COST REQUIREMENTS FOR QUALITY IMPROVEMENTS

	QUALITY IMPROVEMENT	FIXED (FC), VARIABLE (VC) COSTS
Quality of Design: Resource requirements for putting in place acceptable process	Staff training in protocols, drug and cash management	+FC
	Essential drugs	+VC
	Medical supplies	+VC,FC
	Diagnostic & treatment protocols: creation and implementation	+FC
	Addition of administrative staff (cash & drug mngmt)	+FC
	Potential reduction in unnecessary health personnel	-FC
	Information to providers and consumers on quality of health services	+FC, VC
	Mngmt. info. systems	+FC
Quality of Implementation: Doing the right thing the first time	Improving compliance with protocols & MIS support sys.	?FC, VC
	Info. to providers & patients	?FC, VC

To improve the Quality of Implementation, both fixed and variable costs would be affected, but it is less clear what the net cost implications of improvements would be. Some examples of each are given. Fixed costs might include those necessary to institute quality assurance programs, purchase of better equipment, reorientation of management structure, changing the flow of patients. Examples of variable costs might include spending more time with the patient initially, but less time later on because of reduced adverse effects or complications.

6.0 QUALITY, EFFICIENCY, AND COST-EFFECTIVENESS

6.1 CONCEPTS

For this discussion, there are two types of efficiency to distinguish: technical efficiency and economic efficiency. Technical efficiency is when the maximum level of outputs are achieved for a given set of inputs. Alternatively, it is when a given level of output is produced with a minimum level of inputs. Economic efficiency adds the cost dimension; a given level of output is produced at minimum costs. Notably, technically efficient production approaches are not necessarily economically efficient. Technically efficient methods which use expensive inputs will not be the lowest cost alternatives for a given level of output. Outputs can be measured at two levels: intermediate outputs (e.g., visits, other services rendered) and final health outcomes.

Typically it is believed that lower-cost facilities may be achieving their cost reductions by sacrificing quality of care. Comparisons of the efficiency of providers should include indicators of quality of health services (quality-adjusted measures of efficiency).

This document provides preliminary estimates of efficiency, primarily because it focuses on technical efficiency, that is the number of outputs per unit of input, such as the number of visits per health worker. Also, given the limited number of facilities in the samples and the difficulty of creating a single index for quality, a quality-adjusted measure of efficiency was not available. Finally, since health outcomes could not be measured, the efficiency analysis was done using various intermediate outputs. The indicators of efficiency presented in this document should be viewed as suggestive rather than definitive. We assume that, in general, a higher ratio of output to input reflects a more technically efficient process.

What is often ignored is that poor quality of care can lead to either technical or economic inefficiency; that is, poor quality may inhibit efforts to achieve high efficiency. This concept is most easily demonstrated by looking at cost-effectiveness (economic efficiency using health outcomes) of an intervention in a community. For example, suppose that a measles immunization campaign meets its target coverage rates, but close examination reveals that many of the vaccines were ineffective due to poor cold chain maintenance. The linkage between quality of care and cost-effectiveness can be shown using a more detailed definition of community cost-effectiveness. Reaching maximum community effectiveness, that is, how well a therapy works in actual field circumstances for a particular population, depends critically on the quality of the intervention in question. According to Tugwell et al. (1984), given a certain coverage level, four factors determine community effectiveness: efficacy, diagnostic accuracy, provider compliance, and patient compliance. The previous discussion has already alluded to a fifth factor, functioning support systems. Efficacy indicates the rate of medical success of the intervention under ideal laboratory conditions. Diagnostic accuracy is the extent to which patients with a particular condition are diagnosed correctly. Provider and patient compliance deal with Quality of Implementation issues: are processes implemented right the first time? Ultimate effectiveness of a health program in a community does not depend solely on the medical efficacy of a particular intervention. For a given coverage rate, efficacy sets the upper bound, but the other four factors may temper the effect. A weakness in any of the dimensions of community effectiveness may dilute the cost-effectiveness (efficiency) of the program at the community level. Poor quality in terms of such factors as poor compliance, diagnostic accuracy and the like will undermine attempts to achieve optimal cost effectiveness.

6.2 FINDINGS

Ideally, efficiency should be examined using both measures of technical and economic efficiency. As mentioned earlier, this document was limited to measures of technical efficiency, measured primarily in terms of personnel productivity and ratios of budget allocation for various inputs to reflect input combinations. The effect of quality on cost effectiveness is discussed in qualitative terms since no cost-effectiveness studies were actually conducted.

In Senegal, the conduct of both efficiency and quality of care studies allowed one to make inferences about the linkages between quality and efficiency. It is important to note that only inferences can be made since the data did not permit statistical tests of precise relationships between efficiency and quality. The Niger reports did not provide information on efficiency of the health services; however, some qualitative discussion of cost-effectiveness is possible.

6.2.1 Niger

As shown in ***Exhibit 4-2***, the Niger public health sector exhibited some significant gaps in the process aspects of quality. Although guides and manuals for diagnostic and treatment protocols, cash and drug management were in place; several deficiencies in taking vital signs, conducting diagnostic exams and communicating with the patient were particularly notable. For example, only 33 percent of cases had completed at least one key step for taking vital signs. Only 25 percent of cases completed the correct diagnostic exams. Poor compliance with treatment protocols inevitably diluted the cost effectiveness of the program.

6.2.2 Senegal

In Senegal, the public health care system appeared to be both very inefficient and of poor quality as indicated by structural, process and outcome measures of quality. In contrast, most private facilities exhibited higher efficiency and better quality in structural and outcome measures, although process measures were comparable to the public sector. Some private providers exhibited more serious deficiencies in quality than others. In the discussion which follows, productivity of health workers and percent of costs allocated to personnel and non-personnel inputs are used to reflect technical efficiency, remembering that these are not necessarily indicative of economic efficiency. Quality indicators are summarized from ***Exhibit 4-3***. This information is compiled in ***Exhibit 6-1***.

Productivity of personnel is an important measure of efficiency in the use of hospital resources. Ratios of number of visits per health worker reflect, to some extent, the technical efficiency of the hospital, that is, whether resources are being fully used. Overall, productivity of health personnel in the *public sector* was extremely low, although this varied across regions. For doctors, nurses, medical technicians, and midwives the lowest productivity occurred in Dakar. In Dakar health centers, the average doctor saw fewer than two ambulatory patients per day and assisted less than two hospitalized patients. The highest productivity reached only five patients per day in the region of Tambacounde-Kolda. Health center nurses and medical technicians also exhibited very low productivity, handling about two patients per day.

EXHIBIT 6-1
SENEGAL: IMPLIED LINKAGES BETWEEN EFFICIENCY(COST PER UNIT OUTPUT) AND QUALITY

INDICATORS OF EFFICIENCY AND QUALITY	PUBLIC	PRIVATE (OUTSIDE OF DAKAR)			
		FOR-PROFIT	CATHOLIC	COMPANY	OTHER
Productivity: (visits/health worker)					
MD:	2-5	11-12	40-41	20-21	?
RN:	2-14	?	15-17	3	30
% of Costs for Inputs:					
personnel:	75-82%	38%	39%	42%	90%
medicines:	9-16%	12%	28%	28%	6%
other:	10%	50%	33%	30%	4%
Quality (see Exh. 5,6)					
structure:	stockouts freq. (20%-40%)	stockouts rare (0%)	stockouts rare (5%)	occas. stockouts (30%)	freq. stockouts (50%)
process:					
fever & diarr.	poor (40%)	good (85%)	poor (40%)	poor (40%)	fair (50%)
routine med.	fair (<60%)	good (80%)	average (75%)	average (65%)	average (65%)
outcome:					
patient	80% satisfied	satisfied	satisfied	satisfied	satisfied
provider	60% satisfied	satisfied	satisfied	satisfied	less satisfied

In the *private sector*, doctors in Catholic posts saw over 40 curative outpatient visits per day, in company clinics they saw about 20 patients daily. At its lowest, doctor productivity was 10 visits per day in regional for-profit facilities. In Dakar, company clinics showed the highest doctor productivity. Midwives saw about ten patients per day. Nurses provided up to 30 curative visits per day in regional "other provider" clinics and as low as 3 visits per day in regional company clinics. In Dakar, nurse curative care output reached 20 patients daily. Midwife productivity also appeared to be lower in public than in private facilities.

Efficiency also is measured by the availability of the appropriate **combination of resources** required to implement the basic health service. On average, *public facilities* appeared to be functioning with an abundance of health personnel (75+ percent) and gross deficiencies in critical resources such as essential drugs. The assumption here is that a minimum allocation of inputs to medicines is necessary for technical efficiency. Personnel productivity levels appeared to be so low in some cases, that even substantial increases in demand would not be sufficient to fully use these personnel. Additional resources and/or reshuffling of resources (especially personnel) would be required. This comment needs to be qualified; there is no clear evidence whether or not personnel in public facilities are also taking on jobs outside of their public duties (moonlighting). If staff were working multiple jobs, this would effectively reduce the availability of personnel; that is, even though staff were paid full-time, they would only be at the public facility part-time. Without adjustments to reflect actual hours of service, productivity measures will be inaccurately low. Inadequate information is available to determine whether such an adjustment factor is necessary. Such information could provide an indication of whether productivity levels are feasible, and a partial explanation of why observed productivity is low.

In the *private sector*, cost data revealed higher proportions of non-personnel inputs, with the exception of "other providers." In for-profit, Catholic, and company facilities, personnel reached only around 40 percent of costs, with allocations of medicine around 12-28 percent and other inputs about 30-50 percent. In contrast, "other providers" had only 6 percent of costs for medicines, and 4 percent to other inputs.

Comparisons between health worker productivity, input combinations and measures of quality did not indicate a general tendency for efficient facilities to have compromised quality. In fact, inefficient public facilities were plagued with quality problems. For-profit and Catholic private facilities appeared to be efficient and offered generally good quality care. Company and "other providers" were more efficient than the public sector but had some quality problems. One could conclude that this latter segment of the private sector might be sacrificing quality for efficiency.

Poor quality of care, as perceived by patients, could have reduced productivity. The public sector exhibited deficiencies in structural, process and outcome measures of quality. Low utilization reduces the number of patients seen per health worker. For example, public facilities with the highest proportion of patients who received drugs also belonged to the highest utilization group. Similarly, those public facilities giving the highest proportion of prescriptions, rather than the drugs themselves, fell in the lowest utilization groups. Utilization of private facilities was also probably linked to reliable drug inventories.

Poor quality leads to diluted **cost effectiveness in the community**. Expected efficacy rates for various treatments were not met in the *public and private sectors* because of poor patient and provider compliance with protocols, diagnostic accuracy, and choice of treatment. The discussion above already noted such examples as poor communication of medical staff with patients and the omission of standard tests, diagnostic questions, and exams for those reporting fever and diarrhea. Although for-profit facilities showed somewhat better compliance, in general, private facilities performed poorly in process measures.

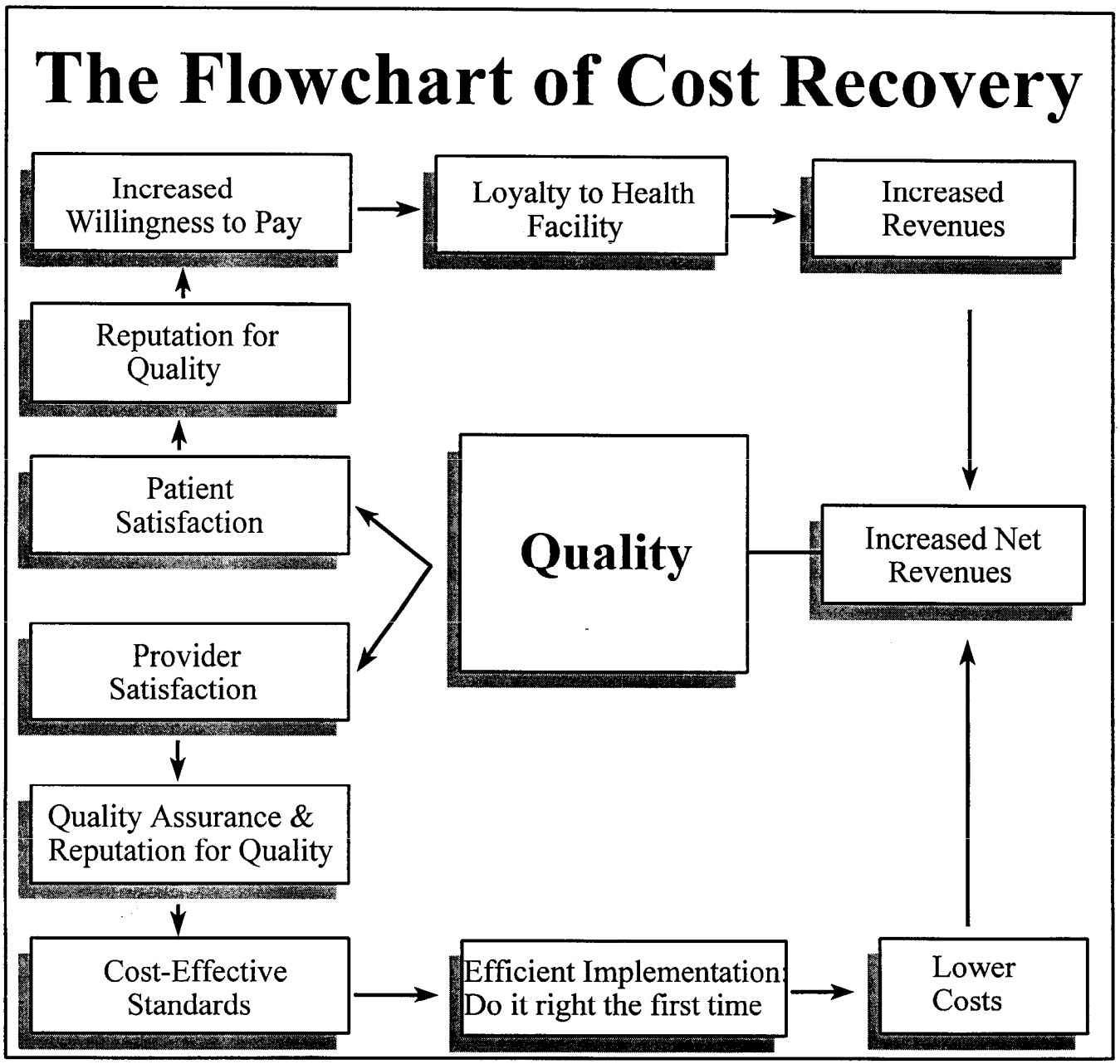
To summarize, evidence from the private sector suggested that higher efficiency did not necessarily mean poorer quality (e.g. for-profits and Catholic), although some efficient providers had some notable problems in the quality of care offered and might be attempting to reduce its costs by lowering its quality standards (company, "other"). In the public sector, deficiencies in quality might be contributing to inefficiency.

7.0 QUALITY AND FINANCING THROUGH COST RECOVERY CONCEPTS

Graph 7-1 offers some detail on the role of quality of care in cost recovery (Wouters, 1994). Although improvements in quality of care may encourage patients to contribute revenues to pay for the health care services they receive and thus increase the revenues of the health facility, the effect on *net revenues* will depend on the extent to which increased revenues offset the cost consequences of the quality improvements implemented. Net revenues depend on two financial flows: (1) the costs to providers of quality improvements (the bottom path), and (2) the revenues generated from patients' willingness to pay for quality improvements (the upper path). The top diagram shows that higher quality of care leads to client satisfaction and an increased willingness to pay for improved services and increased utilization. As a result, revenues to the facility increase. The bottom portion of the diagram traces the effects on the provider. Quality improvements bring technical satisfaction to the provider. Costs are contained when cost-effective standards are adopted; efficiency is achieved when these standards are implemented correctly the first time. There are fewer mistakes requiring rework, less adverse health effects, fewer inappropriate prescriptions and other complications. With a combination of increased revenues and controlled costs, net revenues may increase which can then be channeled back to fund further improvements in quality.

Financial sustainability requires that the sources of funds are sufficient to cover the costs of the services in the long term. In most developing countries, public budgets are severely constrained, either barely stable in real terms or declining. In such cases, financing mechanisms must tap additional funds such as user fees to complement fixed public budgets. In the short run, revenues from user fees should at least cover variable costs (Wouters, 1994). If the price per unit service is below variable costs, then debt grows with the sale of each additional unit of treatment and subsidies will have to increase with increases in utilization. If revenues from user fees are sufficient to cover variable costs, then fixed public budgets can be directed to paying for fixed expenses of quality improvements, especially those which enhance the cost effectiveness of the health sector. When cost-recovery is not possible (e.g. public goods, poverty areas), then public subsidies will have to cover both variable and fixed costs.[1] If revenues from user fees are greater than variable costs, then surpluses can be used to enhance the services or reduce the need for public subsidies. In the long run, the revenues from user fees plus sustainable subsidies should cover all costs. At a minimum, the facility should break even. In managerial accounting terminology, this is known as the contribution margin principle. The contribution margin is the amount of revenues beyond the amount of variable costs which is available to cover fixed costs and maybe even profits. Under a scenario of fixed public budgets, the contribution margin should never be negative. A zero contribution margin is an absolute minimum to maintain the fixed and variable input requirements of the service.

[1] A discussion of the role of government in the financing of health services is beyond the scope of this paper. The focus here is kept to those cases where cost recovery is generally feasible.


The Flowchart of Cost Recovery
Increased Willingness to Pay
Loyalty to Health Facility
Increased Revenues
Reputation for Quality
Patient Satisfaction
Quality
Increased Net Revenues
Provider Satisfaction
Quality Assurance & Reputation for Quality
Cost-Effective Standards
Efficient Implementation: Do it right the first time
Lower Costs

Sources of funds used to finance quality improvements vary in the degree to which they allow household involvement in decisions about which quality improvements to encourage. Under social financing where taxes are collected, the government decides how tax monies are to be used to fund quality improvements. Under fee-per-episode or fee-for-service, patients choose the quality improvements they prefer by "voting with their feet." Studies of health care demand generally indicate that quality of care is an important determinant of choice of providers and that patients are willing to pay for quality improvements (Wouters, 1994). Critical to this process of selecting quality improvements is that governments, providers, and consumers need to be well informed about what quality of care is and how it differs among providers.

7.1 FINDINGS

In a previous section, costs of quality improvements were examined in terms of implications for fixed and variable costs. This section examines this cost information in terms of how these costs might be financed. There are two major questions at hand: (a) What are the sources and amount of funds available to pay for quality improvements on a sustainable basis? (b) Who should decide which quality improvements are funded? ***Exhibits 7-1 and 7-2*** summarize the main points.

For each of the country studies, information is presented on how sources of funds are currently being used to fund quality improvements. Secondly, evidence on willingness to pay for quality is given.

7.1.1 Niger

Sources of funds

The cost recovery pilot project tested two payment methods. Boboye adopted a form of social insurance consisting of an earmarked head tax combined with a small copayment per illness. The district health tax surcharge was 200 FCFA per taxpayer with a copayment of 50 FCFA per adult and 25 FCFA per child. It should be noted that this differs from traditional forms of insurance: it covered non-catastrophic care and was essentially a prepayment for treatment of acute illness at public ambulatory care facilities. The small copayment provided a deterrent to moral hazard (demand for unnecessary care in the sense that its marginal value proxied by a reduced price is less than its marginal cost) but might not eliminate it. The tax payment covered services rendered only at public facilities; visits to private (traditional and western) had to be paid in full.

Say increased private financing through a fee-per-episode system, whereby the patient paid a lump sum each time he or she was ill (200 FCFA for adults and 100 FCFA for children under five). This system contrasts with fee-for-service where every additional visit, test, medical supply, or medicine is charged for. In Say, risk was shared between the patient and the provider since the fixed lump sum was intended to cover all services for the episode of illness. Such a system should have encouraged patients to return for follow-up visits. There could be some danger that providers would cut corners in quality to contain expenses within the fixed payment.

Illéla was selected as the control site where no cost recovery was implemented. All services were provided free at public facilities, although patients still incurred travel and time costs.

EXHIBIT 7-1
NIGER: IMPLIED LINKAGES BETWEEN QUALITY IMPROVEMENTS AND FINANCING

	SAY	BOBOYE	ILLÉLA
Sources of funds: user fee revenues	In Say, revenues from user fees covered about 50-55 percent of the costs of medicines or 35-40 percent of the amount spent on medicines and cost recovery administration. Mngmnt: Legislation was not yet in place to allow the use of revenues from cost recovery to support revolving funds.	In Boboye, the revenues from the copayments covered about 34 percent of the costs of medicines or about 20 percent of costs of drugs and administration. With taxes *and* copayment, 120-180 percent of the cost of medicines was recovered, or 75-105 percent of the cost of medicines plus administration of cost recovery. Mngmnt: Legislation was not yet in place to designate the use of revenues from cost recovery or prepaid tax monies to support revolving funds.	Not applicable.
Sources of funds: non-user fee funds	Government of Niger continued current levels of subsidization including the payment of personnel salaries. The World Bank funded initial stocks of pharmaceutical supplies and recurrent partial subsidies to replenish these stocks. The Belgians provided foreign assistance for the diagnostic and treatment protocols. USAID supported planning, mgmnt, and evaluation of the pilot tests.	Government, World Bank, USAID,and Belgian funds were the same as in Say. In addition, the bulk (75 percent) of revenues earned came from prepaid taxes required of both users and non-users of public health facilities.	Same as in Say except that funds for an intervention were not required.
Willingness to Pay for quality: evidence	In Say the introduction of direct payment system did not have significant impact on the probability of seeking treatment when ill. Negative effects of price on utilization were offset by the positive effects of quality enhancements on utilization.	In Boboye, there was a large and significant increase in the probability of seeking treatment.	The control site of Illéla experienced a modest but statistically insignificant reduction in the probability of seeking treatment.
	Over 80 percent of the people expressed strong desirability of cost recovery and improved quality over the previous health delivery system. Over 60 percent of individuals were willing to pay more than currently set prices. About 25 percent did not want price increases.		

EXHIBIT 7-2
SENEGAL: IMPLIED LINKAGES BETWEEN QUALITY IMPROVEMENTS AND FINANCING

	PUBLIC SECTOR	PRIVATE SECTOR
Sources of funds: user fee revenues	In hospitals, 40 percent of revenues from user fees were allocated to personnel, 36 percent to medicines, and 24 percent to other expenses. In health centers, 29 percent was used for personnel, 49 percent for pharmaceutical products, and 23 percent for other recurrent costs. In health posts, 21 percent of user fee revenue went to personnel, 53 percent to medicines, and 26 percent to other expenses. Based on this pattern, user fees covered the following portion of pharmaceutical costs: 20 percent in hospitals, 55 percent in health centers, 94 percent in health posts. If all revenues from user fees were redirected to cover pharmaceuticals, hospitals would be able to cover 61 percent of their current drug costs, health centers - 114 percent, health posts - 179 percent, health huts - 261 percent.	Cost recovery is the major source of revenue for these facilities. At a minimum, prices are set to break even.
Sources of funds: non-user fee funds	Hospitals, health centers, and health posts relied heavily on government funding to finance a majority of their expenditures: 84 percent of the hospitals' sources of recurrent funding, health centers - 87 percent, health posts - 60 percent, health huts - 0 percent. Some of this funding could be reallocated to support the fixed cost requirements of quality improvements.	Cost recovery is the major source of revenue for these facilities. Perhaps outside sources are available for some investments (e.g. Catholic donations).
Willingness to pay for quality: evidence	Public facilities with the highest proportion of patients who received drugs also belonged to the highest utilization group. Similarly, those public facilities giving the highest proportion of prescriptions, rather than the drugs themselves, fell in the lowest utilization groups.	No specific information, except to note that private facilities generally experienced higher utilization, perhaps due to quality.

The Government of Niger continued to provide current levels of subsidization to the intervention facilities, including the payment of personnel salaries. The World Bank funded initial stocks of pharmaceutical supplies and recurrent partial subsidies to replenish these stocks. In the long-term, drug prices would have to be increased to cover costs. The Belgians provided foreign assistance (both technical and financial) to develop and put in place the diagnostic and treatment protocols. Much of the planning of the pilot tests was funded under USAID/Niamey's Niger Health Sector Support Grant (NHSS).

Boboye generated higher overall receipts than Say, primarily because this district required tax payments from the entire population, not just users. In addition to the revenue from prepaid taxes, the fees drew in about 34 FCFA per new patient. The revenues from the copayments alone covered about 34 percent of the costs of medicines or about 20 percent of costs of drugs and administration. With taxes and copayments, 120-180 percent of the cost of medicines, or 75-105 percent of the cost of medicines plus cost recovery administration was recovered.

In Say, average receipts per illness fluctuated between 150-160 FCFA. This covered about 50-55 percent of the costs of medicines or 35-40 percent of the amount spent on medicines and cost recovery administration.

Social insurance was more effective at raising revenues, the bulk (75 percent) coming from prepaid taxes required of both users and non-users of public health facilities. In contrast, revenues generated by the fee-per-episode payment system was directly contingent on utilization and generated surpluses only if prices were set above unit costs.

The evidence on financing indicated that both public health systems had not yet achieved 100 percent cost recovery of variable costs with user fees and copayments. This meant that for every new patient using the services, the systems incurred a debt which had to be covered by public budgets. In Boboye, Niger, when taxes were included in the cost recovery calculation more than 100 percent coverage of medicines was achieved; however, it was important to recognize that the amount of tax collected was not directly linked to the amount of medicines used. Moreover, there was no guarantee that tax revenues would be used to pay for variable costs. Overall, more needs to be done to assure adequate financing, particularly of variable inputs which had been in notable short supply.

A major concern remained about the management of revenues. Although a legal framework had been established for the two districts, it was not yet nationwide. Official procedures for using health tax revenues were also lacking. Without legal mandates to use tax funds in support of the health system, there would be no guarantee that quality improvements would be sustained.

Willingness to Pay for Quality

The results of an econometric health care demand study strongly suggested that patients were willing to pay for quality improvements (Ellis, Chawla, 1994). For example, in Say the introduction of a direct payment system did not have significant impact on the probability of seeking treatment when ill. In Boboye, where an indirect payment system was introduced, there was a large and significant increase in the probability of seeking treatment. The control site of Illéla experienced a modest but statistically insignificant reduction in the probability of seeking treatment. The larger increase in the rate of utilization in Boboye reflected, in part, the tendency for moral hazard resulting from the smaller copayment. Households with the lowest incomes had about a 4 percent lower probability of seeking formal treatment, given any treatment, than households in the highest income ranges, a difference that was small compared to other regions (Ellis, McInnes, Stephenson,

1994; Ellis and Mwabu, 1991). These results suggested that the negative effects of price on utilization were offset by the positive effects of quality enhancements on utilization.

The conclusion that patients were willing to pay for quality improvements was further supported by the finding that utilization of public health care services was increasing in spite of increases in adjusted patient episode costs as estimated by Wouters and Kouzis (1994). Relative to the control site, adjusted episode cash and total costs in the intervention districts increased as a result of cost recovery. For example, in Say, statistically significant increases in adjusted episode costs occurred for the general population and specifically for children.

Willingness to pay for quality improvements may stem not only from health benefits, but also economic benefits. Some suggest that the increase in private expenditures resulting from cost recovery might partially be offset if the accompanying quality improvements allowed patients to obtain care more cost-effectively (Creese, 1991). For example, it could be that cost recovery accompanied by an improved drug supply reduces the total cost of an episode of treatment for a patient by eliminating additional travel to pharmacies that sell higher-priced drugs. Individuals may substitute away from other more costly sources of care when they visit providers who also provide drugs. This appeared to be partially true in Say where patients experienced insignificant or relatively small increases in adjusted episode costs.

Another study examining patient preferences about the cost-recovery tests found that a vast majority (over 80 percent) of the people expressed strong desirability of cost recovery and improved quality over the previous health delivery system (Yazbeck et al. 1994). In the post-intervention period, based on their actual experiences, a majority of patients declared a strong willingness to pay for improved drug availability; in fact, a large percentage (over 60 percent) were willing to pay more than currently set prices. About 25 percent did not want price increases.

7.1.2 Senegal

Sources of funds

At the time of study, *public facilities* including hospitals, health centers, and health posts relied heavily on government funding to finance a majority of their recurrent expenditures. On average the government paid for 84 percent of the hospitals' sources of recurrent funding, 87 percent for health centers, 60 percent for health posts, and 0 percent for health huts. User fees accounted for 8 percent of recurrent sources of funding in hospitals, 10 percent for health centers, 28 percent for health posts, and 87 percent in health huts.

For over ten years, the public health system in Senegal has required a system of user fees to augment public budgets with private financing. At the time of the survey, the country was on the verge of adopting the Bamako Initiative to pay for pharmaceutical products. Prices were charged for most services provided in all government facilities. Fees in Senegal government facilities were low relative to those in other countries in the region.

Revenues from user fees covered a variety of expenses in each type of facility. In hospitals, 40 percent of revenues from user fees were allocated to personnel, 36 percent to medicines, and 24 percent to other expenses. In health centers, 29 percent was used for personnel, 49 percent for pharmaceutical products, and 23 percent for other recurrent costs. In health posts, 21 percent of user fee revenue went to personnel, 53 percent to medicines, and 26 percent to other expenses.

With the current allocation patterns of user fee revenues, user fees in hospitals covered 22 percent of pharmaceutical products and 8 percent of other non-personnel recurrent costs, while in health centers user fees covered 55 percent of medicines and 26 percent of other non-personnel recurrent expenses. In health posts, user fees covered 94 percent of the cost of medicines and 80 percent of other non-personnel recurrent costs. If all revenues from user fees were redirected to cover pharmaceuticals, hospitals would be able to cover 61 percent of their current drug costs. Health centers would be able to cover 114 percent of their current drug costs, health posts 179 percent, and health huts 261 percent.

In the *private sector*, prices varied substantially among types of providers. For-profit clinics had the highest prices of all providers. Prices at company clinics were second highest and equal to about one-half that of for-profit providers. Catholic and "other provider" clinics had more modest prices. Disparities existed in prices between Dakar (higher) and the regions, but these differences were less than those between types of facilities. Private sector prices were generally higher than those in the public sector. Not surprisingly, most private providers did not disclose revenue information, with the exception of Catholic facilities. Cost recovery accounted for 96 percent of the revenue of Catholic facilities.

Willingness to Pay for Quality

A health care demand study was not conducted in Senegal. However, general observations of facility utilization patterns and corresponding availability of drugs reveals some interesting patterns. In particular, public facilities with the highest proportion of patients who received drugs also belonged to the highest utilization group. Similarly, those public facilities giving the highest proportion of prescriptions, rather than the drugs themselves, fell in the lowest utilization groups.

8.0 SUMMARY AND CONCLUSIONS

This report discussed new empirical evidence from Senegal and Niger in terms of four major issues pertaining to the role of quality in cost recovery:

(1) How can quality of care be defined, measured, and assessed?

(2) What do quality improvements cost?

(3) How is quality related to efficiency and cost effectiveness? and,

(4) How can quality improvements be financed through cost recovery? The content of this report drew heavily from existing reports generated from the two country studies.

8.1 FINDINGS ABOUT QUALITY OF HEALTH CARE

Baseline Deficiencies in Structural and Process Aspects of Quality

The assessments of quality in Niger and Senegal showed similar problems. Baseline conditions revealed severely deteriorated public health systems experiencing frequent stockouts of drugs, supplies and equipment. Many of these deficiencies related to Quality of Design; that is, putting in place the basic resources required to implement a service. The improvements required were almost less an issue of quality than a concern for establishing the basic existence of a service. Provider compliance with protocols for fever and diarrhea were generally poor, although compliance with routine procedures was better.

Improvements in Structural Aspects, Continued Weaknesses in the Process of Care

In Niger, the pilot projects appeared to be successful in improving some aspects of quality in the public sector. The improvements in Boboye and Say occurred through the cost recovery pilot projects; in Illéla, another USAID intervention in Quality Assurance had recently instituted some improvements. A majority of staff had received training in the past two years. Vaccines were present in most facilities, in all three districts. Family planning commodities were generally available only in Say as a result of a World Bank project. Medical supplies were present in a majority of facilities.

Once basic infrastructure was in place, even with the presence of diagnostic and treatment guidelines, significant gaps in the implementation of these protocols were observed, particularly in monitoring of vital signs, diagnostic examination, and provider-patient communications.

Patients Aware of and Satisfied with Quality Improvements, Maybe

Patients seemed to be aware of the quality improvements in medicines and generally felt that this improvement was increasing utilization. Patients appeared satisfied with services, but such results should be taken cautiously since this type of interview rarely uncovers negative attitudes.

Private Sector Often Outperforms Public Sector in Quality of Care

The Senegalese private sector performed better than the public sector in several respects. Stockouts of drugs, equipment, and supplies were much less frequent. Compliance with routine medical procedures was better in private facilities, but both public and private providers could significantly improve in the implementation of fever and diarrhea protocols. Public facility staff perceived their care to be quite average or below in contrast to their private sector counterparts who generally perceived their care to be good. Patients declared that they were satisfied regardless of the provider, again, a highly suspect result.

Deficiencies in Quality Pervasive in Public Sector and Variable in the Private Sector

In Senegal, the results of the quality assessment in the public sector were quite similar across the various types of public facilities (hospitals, health centers, health posts, health huts). No single type of facility demonstrated substantially better care compared to the other types of facilities during the assessment period. In the private sector, there was some important variation in quality among types of private providers. Generally, for-profit and Catholic providers offered the best care. They had no stockouts, good compliance and satisfied staff and patients. Company clinics and "other" private providers suffered from occasional stockout and poor compliance with protocols. Staff of "other providers" were particularly dissatisfied.

Patients and Providers Perceive Quality Differently

In Senegal, there seemed to be important differences in patient and provider perceptions. Patients appeared to be more satisfied with the care they received than providers were with the care they rendered. Providers tended to focus on the availability of supplies and drugs in making their assessments. Patients considered a variety of factors including economic, geographic, and psychologic reasons.

8.2 QUALITY, COSTS, AND EFFICIENCY

High Costs of Improving Quality Often Attributable to the Costs of Doing Business

For both countries, quality improvements required significant investments in both fixed and variable costs. It is somewhat unfair to associate all of these costs with quality, since many of the inputs required could be viewed as "the costs of doing business." Fixed costs included staff training, acquisition and maintenance of durable medical equipment, creation and implementation of diagnostic and treatment protocols, establishment of management information systems, and development of information systems for patients and providers about the quality of health services. Variable cost requirements included improving the availability of essential drugs, disposable medical supplies, patient records, and some information costs. As evident from Niger, cost increases were likely to be significant considering the poor baseline conditions. Eventually, improvements in the Quality of Implementation could result in some cost-savings, although these would be difficult to predict.

High Technical Efficiency Can Be Associated with High Quality

Evidence from the private sector suggested that higher efficiency did not necessarily mean poorer quality, although some efficient providers had some notable problems in the quality of care offered (company and "other" clinics). For-profits and Catholic providers saw more visits per health worker than in the public sector. They also had a more efficient ratio of personnel to non-personnel inputs. As we have already seen, private providers offered generally better quality of care.

Poor Quality Undermines Cost Effectiveness

Interestingly, the data suggested that poor quality of care might have also caused inefficiencies in the health service, although this cannot be shown conclusively. Poor quality could have reduced demand for services, causing low productivity of health workers. Skewed distribution of resources towards personnel undermined attempts to offer effective care and also rendered some inputs less productive. In both countries, expected efficacy rates for various treatments were not met because of poor patient and provider compliance with protocols. Optimal cost-effectiveness of the services could not have been achieved.

8.3 QUALITY AND FINANCING

Cost Recovery of Variable Costs through Copayments Less than 100 percent

Understanding fixed and variable cost implications of quality improvements is critical for ensuring their financial sustainability The conceptual framework emphasized the importance of variable revenues covering variable costs in a context where subsidies and other budgets/contributions were fixed. In both countries there were two major sources of funds: user fee revenues and fixed government budgets complemented by occasional foreign assistance.

In Niger, two forms of cost recovery were being tested. In Boboye, the revenues from copayments alone covered about 34 percent of the costs of medicines or about 20 percent of costs of drugs and cost recovery administration. With the taxes and copayment, 120-180 percent of the cost of medicines was recovered, or 75-105 percent of the cost of medicines plus administration of cost recovery. In Say, revenues from user fees covered about 50-55 percent of the costs of medicines or 35-40 percent of the amount spent on medicines and administration of cost recovery. In Senegal, the public sector had a long history of charging for selected services and was on the verge of implementing the Bamako Initiative. User fees accounted for 8 percent of recurrent sources of funding in hospitals, 10 percent for health centers, 28 percent for health posts, and 87 percent in health huts.

Government budgets provided heavy support in both countries. In Niger the government continued to provide current levels of subsidization. The World Bank funded initial stocks of pharmaceutical supplies and recurrent partial subsidies to replenish these stocks. The Belgians provided assistance in developing and implementing the diagnostic and treatment protocols. Much of the planning, design, and implementation of the pilot tests was supported by USAID funds. In Senegal, on average, the government provided for 84 percent of the hospitals' sources of recurrent funding, 87 percent for health centers, 60 percent for health posts, and 0 percent for health huts.

The evidence on financing indicated that with user fees and copayments, neither public health systems had yet achieved 100 percent cost recovery of variable costs. This meant that for every new patient using the services, the systems incurred a debt which had to be covered by public budgets. In Boboye, Niger, when taxes

were included in the cost recovery calculation, more than 100 percent coverage of medicines was achieved; however, it was important to recognize that the amount of tax collected was not directly linked to the amount of medicines used. Moreover, there was no guarantee that tax revenues would be used to pay for variable costs. Overall, more needs to be done to assure adequate financing, particularly of variable inputs which had been in notable short supply.

Willingness to Pay for Quality

In both countries, the evidence suggested patients' willingness to pay for quality improvements. In Niger, both intervention districts experienced stable or increasing rates of utilization, suggesting that the negative price effects on utilization were offset by the positive quality effects. A patient survey indicated that over 80 percent of the people expressed strong desirability of cost recovery and improved quality over the previous health delivery system. In Senegal, detailed evaluation of health care utilization patterns was not done; however, facility-level data suggested an important linkage between quality and use. Public health facilities with the highest proportion of patients who received drugs also belonged to the highest utilization group. Similarly, those public facilities giving the highest proportion of prescriptions, rather than the drugs themselves, fell in the lowest utilization groups.

9.0 GENERALIZABILITY OF FINDINGS

The findings from the studies of Senegal and Niger have important similarities with experience in other developing countries. In this section, each of the major findings from the Senegal and Niger studies are briefly discussed in terms of other significant efforts described in the public health literature. Some of this review is drawn from Wouters (1994).

9.1 MEASURES OF QUALITY

Recently, more facility-based surveys and case studies looking at issues of quality have moved beyond structural measures of quality to examine process and outcome measures. Perhaps the most extensive attempt to do this began with the USAID PRICOR project which developed comprehensive lists of essential activities and tasks, similar to practice parameters, for seven child survival interventions. The project conducted assessments in twelve countries yielding over 6,000 observations of health worker-client encounters (Nicholas, et al, 1991). The continuation of the PRICOR project, known as the USAID Quality Assurance Project, added a new dimension to quality assessments and improvement by adapting both traditional methods of quality assurance (QA) and the relatively new Total Quality Management approach to developing country scenarios (Franco et al., 1994; Brown et al., 1991). Of particular importance was the attention given to integrating quality assessments and improvements into management systems to facilitate continual quality improvement. At the time of the surveys, the Niger and Senegal studies had not added this management dimension.

Other examples of efforts in quality assessment include the study of Ecuador (Robertson et al., 1991), Papua New Guinea (Garner et al, 1990), Tanzania (Gilson et al., 1991), Bolivia (Richardson et al., 1992) and the Dominican Republic (Lewis et al., 1990). They used a variety of methods. Most used some kind of inventory of critical equipment, supplies, medicines, management tools, and personnel. For process measures of quality, these studies used a mixture of observations of episodes of care, staff interviews, and other indirect information such as availability of resources for specific treatment protocols. Health outcomes were rarely monitored at the facility level; however, Shepard et al. (1993) in Colombia made a unique attempt to do so. The studies listed above also wrestled with attempts to develop indices of quality which aggregate various aspects of quality. Appropriate, valid, and reliable methodologies for measuring the structural, process, and outcome aspects of quality are still under major discussion.

9.2 FINDINGS ABOUT QUALITY

The findings of the Niger and Senegal studies are not surprising in light of findings from other developing countries. The PRICOR twelve-country survey found highly prevalent, serious program deficiencies in areas including diagnosis, treatment, patient education, and supervision. Most of PRICOR results focused on the public sector. Not much is known about private providers. The Senegal study was unique in its fairly in-depth look at the quality of various private providers. Importantly, several—but not all—types of private providers offered relatively high quality of care. This was consistent with the findings about Prosalud in Bolivia (Richardson et al., 1992).

9.3 QUALITY, COSTS, EFFICIENCY

Previous work on the relationships between quality and costs was almost non-existent. In developing countries, the focus was on the costs of Quality of Design such as in the study of the Dominican Republic (Lewis et al., 1990; Wouters, 1994) resulting from severely deteriorated health infrastructures. The studies in the Dominican Republic, Senegal, and Niger all pointed to the need to make significant investments in certain types of resources for quality improvements. A similar result is emerging from a study of intrapartum care in the Bamako Initiative in Nigeria (Ogunbekun et al., 1994). Investigation of the costs of the Quality of Implementation has generally not been done in developing countries and was not part of the Senegal or Niger projects.

Quality-adjusted measures of efficiency (either technical or economic) are almost non-existent in the developing country literature. Comparisons of efficiency among providers is complicated not only by differences in quality, but also by differences in case mix, case severity, scale of activity, and types of services rendered. These issues were carefully explained in a survey of efficiency studies in LDCs (Bitran, 1993). Given these complexities, the limited nature of the investigation of efficiency in the Senegal study was not surprising.

9.4 QUALITY AND FINANCING

There is substantial evidence that clients are willing to pay for quality (Leighton, 1994; Wouters, 1994). The Niger and Senegal results suggest the same.

The importance of avoiding negative contribution margins (revenues less than variable costs) in cost recovery initiatives was often observed although not always explicitly mentioned. For example, the UNICEF-led Bamako Initiative placed substantial importance on recovering the costs of drugs plus some additional surplus (McPake et al, 1992). Empirical evidence suggested that user fees often generate 100 percent of medicine costs (Leighton et al., 1994). In both Niger and Senegal, objectives appeared to be to recover the full cost of drugs plus some surplus.

What appeared less certain in cost recovery initiatives, including those in Niger and Senegal, was how these revenues and surpluses would be used. Generally, more needs to be done to encourage decentralized use of revenues and to channel revenues from user fees to finance other variable cost components including those related to quality improvement. Evidence suggests that cost recovery initiatives are more likely to lead to quality improvements when health workers at facilities have the authority and incentives to make improvements (Leighton, 1994). In over 90 percent of cases where improvements were cited in a recent survey of experience, at least a portion of the user fee was retained and managed at the local level. However, in 30 percent of the cases where user fees were managed by facilities or by local health committees, quality did not change substantially, suggesting that local management is necessary but sufficient for quality improvements. Local managers need to have a better understanding of which quality improvements are most necessary and what the fixed and variable cost implications are. The latter is critical for ensuring financial sustainability.

10.0 PROGRAM RECOMMENDATIONS

1. Quality measurement and assessment

Substantial efforts to measure quality at all levels (structure, process, and outcome) have already begun and should be continued. As a first step, practice guidelines for diagnostic and treatment protocols (including patient-provider relationships), and for other support services (logistics, information systems, management) should be developed. The role of support services (beyond supervision) in enhancing the quality of care needs more attention.

Process standards should identify the key steps in each process while allowing some room for variations in practice. The goal should not be to create rigid step by step 'cookbook medicine', but rather to provide guidance on cost-effective procedures, recognizing that for some illnesses, clearcut evidence on cost effective treatment is still lacking, especially when local- and patient-conditions are taken into account.

Second, each process guideline should be accompanied, in parallel fashion, by a corresponding list of resource requirements. In the past, this step has rarely been done. Third, quantifiable indicators for medical and support services and resource requirements should be identified and benchmarks chosen for monitoring the successes and failures of implementation. A critical part of this step is to obtain consensus among experts on the key steps which should be implemented since there is unlikely to be consensus on all aspects of the standards.

More reliable and valid indicators of patient satisfaction are needed. Comparisons of the advantages and disadvantages of various methods such as focus groups, exit interviews, informal interviews, client windows, and household patient surveys should be conducted. Developing measures of health outcome and attributing changes in health status to specific treatments are important but daunting tasks; however, attempts should be made to improve quality assessments in this respect.

2. Continuous quality improvement

Often, assessments of quality are performed as one-time events. Efforts should be made to conduct quality assessments on an ongoing basis to ensure the quality is always improving and quality improvements are, in fact, sustained. The Total Quality Management (TQM) approach offers important methods and tools in this regard. Further attention should be paid to how traditional quality assurance methods and TQM could be adapted in developing country settings to ensure continual and sustained quality improvements.

3. Quality improvements and management

Quality assessments in developing countries have tended to emphasize inspection-type data collection techniques. Opportunities for imbedding quality assessments and monitoring in management systems should be explored. The Total Quality Management approach offers important concepts and tools in this regard. Further attention should be paid to how traditional quality assurance methods and TQM could be adapted in developing country settings to improve management systems to encompass concerns for quality of services.

4. Net costs of quality improvements and priorities for cost analysis

The net costs of quality improvements are relatively unknown. Given the severely deteriorated infrastructures in many public health systems, it is expected that the resource requirements for improvements in *Quality of Design* are likely to be quite high in relation to existing budgets. This heightens the need for standards which are both cost-effective and affordable. Also, standards should carefully identify critical and semi-critical resources, since in many cases, only critical resources will be affordable, even with substantial donor funding. The cost consequences of improvements in the *Quality of Implementation* are almost totally unknown; little empirical work has been conducted on this topic. Managerial tools need to be developed to track the costs of quality improvements. TQM methods offer some guidance in this regard. The USAID Quality Assurance Project has also begun work on such methods.

Ideally, one would want to collect cost data in conjunction with every quality improvement effort; however, this is not likely to be feasible. Instead, the following focus areas for managerial cost analysis are likely to be useful. First, in a situation where the health infrastructure has seriously deteriorated, it is likely that some additional resources will have to be put in place. In such a case, it would be important to estimate the costs of achieving minimum resource needs and to ascertain the means for financing these costs. Second, for a given illness, if substantial debate exists about which standard of treatment should be promoted as policy, analysis should include assessing the cost effectiveness of the alternatives under consideration. Third, only when the basic resources for implementing standards of practice and supporting services are in place, is it more appropriate to begin looking at the costs of Quality of Implementation. Costing is particularly useful when it can be demonstrated that certain improvements in the Quality of Implementation generate significant cost-savings or that they result in significant cost increases. Costing is less necessary when the cost implications are minimal or obvious. However, to encourage more attention to quality improvements, it would be informative to document those which can be made with little or no additional resources.

5. Financial management information systems

Quality of care is closely linked with health care financing, both efficiency and revenue-generating aspects. Financial information systems should go beyond basic financial accounting and bookkeeping to specifically include cost accounting techniques.

6. Financing fixed and variable costs of quality improvements

Quality improvements have both fixed and variable cost consequences. Given fixed or extremely limited government budgets for health and the limited ability, at least initially, for cost-recovery mechanisms to break even (of total costs), user fees should focus on paying for the variable cost components of quality improvement (e.g., drugs, disposable supplies) to ensure financial viability under such constrained conditions. Importantly, variable costs should not be confused with operating costs. Generally, variable costs are a subset of operating costs. Fixed cost components (e.g. personnel and equipment) would be more appropriately financed by other fixed sources of income such as public subsidies or donor contributions until revenue generation from cost recovery could begin to fund some of these. Limited government budgets need to be carefully directed to quality improvements which improve cost-effectiveness and which qualify as public goods.

7. Tapping willingness to pay for quality

The evidence suggests a strong willingness to pay for improved quality. More effort should be placed on understanding what patients perceive as quality of care, beyond the availability of drugs, and on tapping willingness to pay as a source of revenue to support quality improvements.

8. Cost recovery legislation

Management and information systems alone will not improve the quality, the efficiency, or the financial sustainability of health services. Legislation is required to permit the use of revenues to support quality improvements. Decentralization of authority is needed to facilitate locally appropriate decisions. To the greatest extent possible, households and communities should play an active role in determining the quality of care which is both acceptable and affordable. Priority should be placed on creating and implementing the appropriate legal environment for cost recovery and allowing revenues to be channeled to locally appropriate quality improvements.

9. Quality in the private sector

Substantial segments of the private sector appear to be both efficient and offer high-quality care. Efforts should be made to encourage the growth of these private providers. In addition, more specific information is needed on what aspects of quality private providers excel in (best practices), what incentives and conditions exist in the private sector to encourage high quality, and what is required to identify poor-quality private providers and to either improve them or discourage patients from using them (e.g. regulation, public information). A key question is whether the public sector can emulate the positive quality aspects of private providers. More analysis of this question is needed.

10. Public information about quality

Markets work better when both providers and consumers are informed about the quality of services they are selling and buying. Both providers and patients could benefit from being more informed about the quality of care offered by all types of health services. The government should develop a program to widely distribute information about quality and costs of care. Not much has been done in this area, but lessons from health communications programs should prove to be an important starting point.

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